COMMUNICATIONS WORLD

INCORPORATING COMPUTERWORLD ON COMMUNICATIONS

April 1988 The newspaper for the communications professional ISSN: 0817-1904

OSI LANs X.25 ISDN

AT ATUG '88

DATACRAFT
Data Communication

The leading data communications
company is Australian.

Datacraft brings OSI systems to Australia

One of Datacraft's strategic directions in the communication industry is to develop and supply Open Systems Interconnection (OSI) conformant and Value Added Networks.

Over the last few years, Datacraft has established a Pacific Region Network Development Centre and obtained the distributorship of products which are the essential building blocks of OSI-based networks.

Such products are the Telematics series of network processors and Retix portable OSI software products. These products, which are supplemented by local software development, form the basis of Datacraft's network product offerings, and fulfil the requirement to provide local content and expertise in OSI communications technology.

The X.400 Message Handling System (MHS) and X.500 Directory Service Standards, which are supported by the underlying six layers of the OSI reference model, are the major international standards now emerging for electronic mail.

Datacraft recognises that X.400 based products wil be an essential component in every business network and information system. Datacraft is fully committed to initiatives such as OSICOM, and the progression and development of OSI products in Australia.

Datacraft's stand at the ATUG '88 exhibition features an operating OSI-based Value Added Network which demonstrates the company's OSI commitment and its capabilities in this area of leading edge data communications technology.

Telematics

The Telematics family of programmable communications processors consists of high performance data communication systems. The X.400 MTA-UA software being demonstrated by Datacraft resides on a Telematics Series 2000 Network Processor. As high end members of the Telematics family, Series 2000 systems are ideally suited to data communications applications, such as packet switching, terminal concentration, networking applications, and communications software development.

The layered software design of Series 2000 systems provides the programming flexibility needed to adapt to different protocols and provides a consistent and friendly interface for the systems designer. A powerful, communications-oriented, operating system supports concurrent multiple-tack execution. A variety of optional software and a full line of general purpose system tools support the integration of value-added capabilities.

High system reliability and configuration flexibility are achieved through modular hardware architecture and an error containment philosophy.

The standard Telematics X.25 and asynchronous communications handler are used by the X.400 product to interface to the X.25 data network and terminal interface respectively.

Retix

Retix (which is Latin for network) provides a complete set of OSI portable software products of which X.400 and the underlying layers are used in the Datacraft MTA-UA. Retix supplies its OSI portable software products, particularly the X.400 product, to a number of vendors and software houses internationally. The company is also involved in the progression and development of OSI standards within the USA.

Datacraft being the Australian distributor for Retix, will supply Retix products in source code form or supplement them with local development for use in OSI network systems.

CAP Portation of X.400

CAP is a software house in the United Kingdom which originally ported the Retix X.400 OSI core product into the Telematics environment. Datacraft has purchased the source of the CAP/Retix product for further development and to gain position in the rapidly expanding X.400 marketplace.

CAP demonstrated this product at Telecom '87 in Geneva and transferred X.400 mail to the Datacraft node. Since then, Datacraft has been working with other OSICOM members on inter-operability testing of the equipment.

User Agent interface

The user interface provided by the X.400 core product is file based, therefore the product is ideal for User Agent (UA) interface customisation which can utilise graphics terminals or transfer the messages as files across other communications interfaces. Datacraft has developed the UA and terminal graphics software used for the OSI demonstration as a typical graphics-oriented, user interface.

Protocol analysis and testing

The X.400 product has optional diagnostic traces built into the source code. Also, there is distinct separation between the RTS-ISO stack, the MTA and the UA components. This separation permits under-developed X.400 test generators and protocol analysis tools to be built around the Datacraft X.400 product.

Datacraft sees OSICOM as a fundamental vehicle for the ongoing development and marketing of OSI products and information systems. OSICOM will also provide a focal point for the growth of OSI expertise in Australia, which is essential for the expansion of information technology systems.

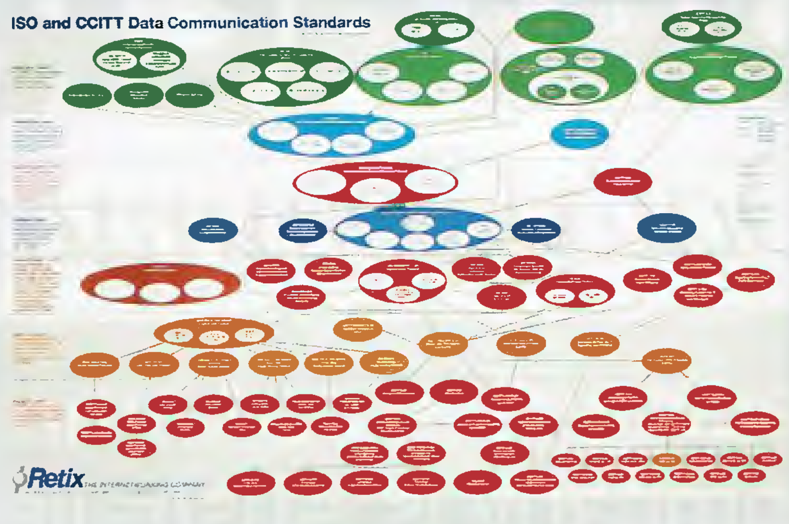
Poster

Confused about data communications standards, the seven OSI layers and the relativity between the various ISO and CCITT standards that define each layer?

Well, there is no need to be any more. OSI-compatible product maker, Retix Inc., has produced a comprehensive chart in poster form which shows the whole picture and how the seven layers and their standards all tie together.

Datacraft, exclusive distributor of Retix portable OSI software in Australia, has a limited number of these invaluable posters available at $10.00 each.

To obtain your poster, write to the Marketing Secretary, Datacraft (Aust.) Pty. Ltd., P.O. Box 333 Croydon, Vic. 3136, enclosing a cheque for $10.00 made out to Datacraft.



A multiplexer family to meet all requirements

Datacraft will feature the latest range of Micom statistical multiplexers on its stand at the ATUG '88 exhibition.

The range provides users with multiplexers to suit all purposes, from the fully-featured LCi statistical multiplexer, the perfect choice for limited budgets, to the Micom Box type 3, and the various Featurepak cartridges available for the Micom Box Series to suit changing requirements and needs.

Datacraft is the Australian distributor for multiplexer products from Micom Systems Inc. of Simi Valley, California, acknowledged as a world leader in multiplexer technology.

The company produces a family of multiplexer solutions and was one of the first to internationally introduce the Featurepak concept.

The LCi uses Micom's enhanced statistical multiplexer software as a base and provides one of Australia's lowest cost solutions for point to point data applications.

Key features include:

☐ 2, 4 or 8 channel versions,
☐ 'floating' menu-driven command facility for convenient system management,
☐ liquid crystal display window shows system status in easy-to-read words,
☐ flow control per channel end with conversion supported over composite link,
☐ support for HP, DEC, DG, Prime, Tandem and other minis,
☐ X.21 bis support standard,
☐ full diagnostic capability including local/remote channel and composite loopbacks, channel EIA status, and self-test,
☐ full Telecom Category A approved status.

All channels can be configured up to 9600 bps without fear of data loss, and external clocking permits LCi's composite link to run at speeds up to 19,200 bps.

The LCi is the most advanced, cost efficient solution for providing remote access to a host computer. Datacraft already has hundreds of units installed throughout Australia since its introduction last year.

Micom Box Series

At the next level up, the Micom Box Series represents the latest generation of multiplexer networking solutions. In essence, the Micom Box is a hardware 'engine' that will power a variety of application 'vehicles' in the form of Featurepak cartridges.

The Box and Featurepak cartridges are all modular to allow easy change from point-to-point statistical multiplexing to multipoint or X.25 network access — as simple as changing a games pack on a PC.

Datacraft

OSI — LANs — X.25 — ISDN

Datacraft is exhibiting a powerful demonstration of its ability to provide Corporate Networking Solutions based on international standards and utilising an impressive array of newly released products.

COMMUNICATIONS
WORLD

UG '88 OFFICIAL SHOW CATALOGUE

INCORPORATING COMPUTERWORLD ON COMMUNICA

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'Software delay' trips up Hicom show

By Luis Huesch

MELBOURNE — Siemens has decided to pull out of the Australian Telecommunications Exhibition and its planned working demonstration of the Hicom ISDN switch because of "some minor delays with the introduction of enhanced feature packages".

But the company said it was "extremely pleased with the performance of all of the Hicom systems installed at field trial sites in Australia".

Siemens Australia general manager, telecommunications, Theo Korbel, asked whether the company's efforts to have Telecom market the Hicom had bogged down, said this software delay, "together with the delay in availability of Telecom's primary rate ISDN access, has resulted in our decision to not market Hicom actively right now and so to withdraw from the Atug exhibition".

In what was seen as a pointed reference to plans by Ericsson and Fujitsu to highlight ISDN at the show, Korbel added that "any displays of ISDN connectivity at Atug would only be artificial as no genuine Telecom ISDN access will be available then".

But Korbel stressed that "Siemens Hicom will of course participate in Telecom Australia's ISDN public network field trials later this year".

While sidestepping the question of whether or not Telecom would distribute the Hicom (Communications World, October 1987) — as it now does the Siemens 601 switch — Korbel's statement could be interpreted as signalling that Siemens *may decide to actively market Hicom itself* after all.

Siemens last year received Telecom restricted authority to connect and conducted field trials. Commenting on allegations that Telecom had failed to impress potential customers with the switch, the vendor company said "a number of Hicom systems have been undergoing field trials for some months and are reported to be performing very satisfactorily". Telecom reportedly has installed five or six Hicoms, including one at Sydney's Telecom House.

Meanwhile in West Germany, Hicom has been admitted into stage three of the Bundespost's ISDN Basic Rate trial, having successfully completed stages one and two since January 1987. Phase three supports advanced features such as Group 4 facsimile transmission at 64K-bit/sec, or file transfers via one B channel while the second B channel is available for simultaneous voice or text communication. In this phase, two Hicom 600 and two Hicom 180 systems will be connected to the public ISDN exchanges in Stuttgart and Mannheim for the trials.

Evans plumps for public Telecom Corporation

CANBERRA — Beating a strategic retreat from a politically untenable privatisation position, the Minister for Transport and Communications, Senator Evans, has opted for incorporation of Telecom as an unlisted public company in which the government holds all the shares.

Evans, in a series of discussion papers on possible futures for Telecom, OTC, Aussat and Australia Post submitted to Caucus recently, outlined four possible scenarios. These range from keeping Telecom's present structure while injecting capital, through removal of borrowing and business controls and opening the carrier up to external competition, to incorporation and repeal of the 1975 Telecommunications Act.

The Overseas Telecommunications Commission (OTC) can be expected to continue performing well whether or not it remains in the public sector, said Senator Evans, who however points out that "there is a case for removing the present restrictions and government controls to further increase efficiency". Again, "incorporation offers the potential to further develop OTC along commercial lines".

Aussat is more of a worry: future revenue forecasts have been scaled down substantially from initial expectations, and demand shortfalls could critically affect the space carrier. Aussat itself expects increased revenue flows from three-satellite operation, increased transponder use and *higher tariffs* in the early 1990s "provided there are no significant policy changes . . . and the economic outlook is stable".

Selling Aussat now would incur "a significant capital loss", argued Senator Evans, who instead prefers a mixture of allowing more competition with Telecom and a restructuring of the present shareholding (75 per cent government/25 per cent Telecom) with an equity injection.

It is apparent from the detailed Telecom case that Senator Evans now favors the incorporation scenario, which also calls for setting up a regulatory environment within which the proposed company would operate. "Incorporation would provide the impetus to remove existing statutory restraints . . . (and) . . . offers the potential to accelerate the process of allowing Telecom to operate along more commercial lines," the minister argued.

Observers said incorporation would also ease the path to privatisation proper — to any desired degree — at a later date.

The minister stressed that the arguments for retaining Telecom in public ownership are based mainly on the carrier's community service obligations, but it also helped assure local purchasing and enabled somewhat more

(Continued page 2)

PNG plugs in to X.25 world

PORT MORESBY — The Papua Guinea Post and Telecommunications Corporation (PTC) has commissioned the country's first public packet-switching network, Pangpac, linked to the rest of the world via an OTC gateway.

The facility, housed at the Boroko telephone exchange, was supplied by Datacraft — highlighting the company's increasing penetration of regional markets following a major installation for the Hong Kong PTT.

Pangpac, based on the Smartnet range of Telematics International X.25 equipment distributed regionally by Datacraft, is intended to give local customers X.25 as well as X.28 access to dial-up databases in Australia and overseas.

(Continued page 2)

Top marks for Netplex team

LOOKING after the networking needs of 100-plus companies in a Dunlop/Goodyear partnership, Bruce Lehmann can use all the help he can get—and he gives Telecom top marks for helping with the planning of the group's nationwide network. Lehmann, technical manager for the information systems unit of Tyre Marketers, is "putting up a major CPU and the network behind it" every three to four weeks with his three-member team, plus a five-member DP/technical services group. They put Brisbane online to the group's Melbourne computer centre via a 48K-bit/sec Netplex link last month, and say the network is growing "on time and on budget". Full story—page 47.

Clients queue for NZ network

IDG News Service

AUCKLAND — New Zealand's first fully digital wide-area network is nearing completion this month for the nation's Government Computing Services (GCS) — and already clients are queuing up to use it as an alternative carrier for voice, fax and video.

The bureau expects the network to save at least $NZ1 million a year on its $NZ5 million annual bill from Telecom NZ.

The $NZ1.2 million multi-mode network, built on Australian-made Scitec Maxima smart time-division multiplexers, consists initially of a 2M-bit/sec link between GCS's original Pipitea and the new Trentham computer centres, with multiple 48K-bit/sec links to Christchurch, Palmerston North, Hamilton and Auckland.

Final connection from the network nodes to the endusers' terminals is still analogue. "At this stage Telecom (NZ) is just not competitive in the multi-drop and shorthaul area," according to GCS network manager Max Kempson.

In mid-April, with the introduction of Telecom NZ's Nx64K-bit/sec digital service, the Auckland-Wellington link will be upgraded to 2M-bit/sec while the other links will initially run at 384K-bit/sec (6 × 64K-bit/sec). But according to Kempson, they will go to 2M-bit/sec "very quickly" also.

The network serves more than 4000 user terminals from Bluff to Kataia, and it is growing at 25 per cent a year. The Scitec multiplexers — supplied by Commscorp — are protocol-transparent and can handle data, voice, video, facsimile and telex traffic. GCS

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OTC throws off fetters to market in Asia, Pacific

SYDNEY — Following in the steps of Telecom International, OTC has formed OTCI (Overseas Telecommunications Commission International), which executive director Peter Shore said is uniquely positioned to market Australian expertise and equipment in the rapidly industrialising countries of the Asia-Pacific region. The new company will specialise in the design, installation and management of networks.

"OTC is a marvellous place, but it is saddled with regulatory procedures — deals would be done before bids could be approved in Canberra. OTCI will operate outside this regulatory environment. Our first deal is a two-year management contract to make the Republic of Kiribati's national and international networks commercially viable," Shore said.

"Further joint ventures should come, but they will not necessarily be formal legal agreements. Our 5-10 year technical lead will allow us to come in as consultants behind Thai or Malaysian organisations for instance. We have a natural entry since heads of industry in Asia have been dealing with OTC for 40 years.

"We will also be in a position to provide services such as our advanced network management/monitor software package, which can drive existing networks more effectively and therefore reduce the carrier's need to investment in network hardware."

Asked about OTCI's revenue projections, Peter Shore replied: "We expect no more than $A3-5 million in the first year and rapid growth after then."

Plessey, GEC join forces

SYDNEY — Plessey Australia and GEC this month officially joined their telecommunications operations, forming GEC Plessey Telecommunications (Australia) Pty Ltd (GPT) and aiming to become the country's tenth largest electronics company within a year.

The new company intends to concentrate development resources on new mobile communications systems as well as public network equipment, and sees worldwide export opportunities in digital communications, radio communications and PABXs.

Born in a worldwide merger of the two companies' UK parents, the Australian company expects to turn over $A70 million in its first year of joint operations. GPT will be a major supplier of data communications, pay telephones and transmission equipment to Telecom, but says it will also "compete vigorously in the business telecommunications market with a comprehensive range of PABXs, (mobile) radio and information technology products".

In the UK, Plessey and GEC jointly developed British Telecom's digital telephone exchange, the System X, and have begun exporting the switch, GPT Australia managing director Godfrey Hole — a former director and chief electronics executive of GEC — said the joint venture "combines our expertise in a bid to achieve a global impact".

GPT Australia intends to pool its research and development resources at its new headquarters, the existing GEC Marconi telecommunications division plant at Silverwater, Sydney. Among its staff of 400, more than 70 scientists and engineers will work on product development for local and overseas markets.

Centre runs Lan link to Unisys and ICL

HOBART — Tasmania's State Computer Centre, servicing around 20 disparate networks on the island, might well claim a world first: it is running local-area network (Lan) gateways to both Unisys and ICL mainframes simultaneously over a single communications server.

The pilot project, for the Community Welfare network, was aimed at making "standalone" mainframes accessible to Lan users. The centre has a number of Unisys and ICL mainframes, several of which are now linked by microwave throughout Hobart.

According to Olivetti engineers who helped pioneer the feat, it is believed to be the first time gateways have been used successfully to give users access to both CPUs from the one server.

Hobart support manager Terry Churchill said a 3Com Lan was linked to a Unisys 1100/90SV by means of a Chi-Lan board and software. A UK company, Network Designers, supplied the Tangogate board and software that provided the ICL gateway.

Churchill said the 3Com network was configured with an M280 (an Olivetti PC/AT compatible machine running at 12MHz) as the Lan server and several M240 (XT compatibles running at 10MHz) as workstations. An M240 was also used as the communications server.

Both gateways could be open simultaneously, letting network users enter and leave either gateway from MS-Dos at the touch of a key.

Announcing a $345 async/sync converter

CASPA is a small, stylish box that...
- Lets your async terminal transfer data at any baud rate (up to the baud rate of your sync modem).
- Uses standard RS232 connections.
- Can be used with any async equipment.
- Lets you connect to DDS (Digital Data Service).
- Is also a modem isolator.
- Detects and sends async break.

Baud rates:	300, 1200, 2400, 4800, 9600, 19.2k, 38.4k bps.
Protocol:	8 or 9 bit word length, 1 or 2 stop bits.

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Telecom scenarios outlined

(Continued from page 1)

direct government controls over the impact of telecommunications on Australias economic and social development. He noted that Telecom could become confused over which set of objectives, whether business goals, social goals or broad government policy, it was expected to pursue.

Senator Evans concluded that there was "scope for efficiency gains by Telecom, and the majority of them can be pursued under public ownership. The sale of Telecom has in any event been specifically ruled out by the Prime Minister."

Status quo

Dismissing the first scenario that would maintain the status quo, Senator Evans said that "under this scenario Telecom's ability to continue to innovate and maintain a world-standard telecommunications infrastructure would be limited, as would be its ability to maintain internal cross-subsidisation levels".

The scenario in which loans council and other government controls on Telecom's day-to-day business would be removed also fails to find grace: unless pure public sector controls are applied, public ownership benefits "may be seen by some to decline".

On external competition, Senator Evans noted that there is already competition in some sectors of Telecom's business, particularly in the faster growing areas. "This competition will increase in the future even without formal regulatory change," the minister warned Caucus.

Even the present scope and scale of government intervention could constrain "the commercial capacity of Telecom to participate advantageously in the increasingly global scale of business telecommunications," he said, adding that this in turn could inhibit wider Australian industry activity in the information-dependent sectors.

Meanwhile industry sources said Senator Evans is seeking to have his Department of Transport and Communications made the "regulatory environment" in which a Telecom Corporation would operate. Such a move would be vigorously opposed by an alliance of industry and user groupings, who have argued for a politically independent regulatory agency.

NZ network serves 4000 user terminals

(Continued from page 1)

intends to use all of these capabilities.

GCS and Commscorp are to demonstrate video-conferencing over the Auckland-Wellington link to the NZ Justice Department next month, using Datapoint's Minx system which Justice is considering because it permits integration of video and data on the same PC-type screen.

According to Kempson, another, unidentified GCS client wants a voice service, and a third is discussing an extensive fax network. GCS is only waiting for deregulation before it provides the services.

"At present we can't legally offer them a service because of the way the regulations are written," said Kempson. "But we are going to tackle that when we are ready to offer the service," he said when commenting on the video-conferencing plan.

GCS had planned to go to a digital network before Telecom NZ began offering its Digital Data Service in mid-1987, and a decision to move its computer centre from Pipitea to Trentham accelerated the switch.

Scitec was picked on facilities, price and availability ("they could deliver in a very short timescale," said Kempson); a contract was signed with newly-formed Commscorp on October 30 last year and installation of the new centre with its four Unisys A15 mainframes was completed by January 15.

PNG plugs in to the world of X.25

(Continued from page1)

The PNG network is initially designed to handle more than 100 users, but it is configured for easy expansion. Two additional nodes have already been ordered, according to Datacraft. It will also be used to train PNG operators in the X.25 protocol.

The installation consists of two Pad/switch nodes connected together to provide 24 asynchronous and seven X.25 synchronous links and capable of handling up to 186 simultaneous sessions. Fifteen rack-mounted modems are connected to the system, which is managed by an STC-ITT AT-compatible micro running the Smartview network management software. Twin "mirrored" hard disks provide a degree of fault-tolerance.

Users targeted are financial institutions, universities and schools, and government and medical agencies which need X.25 access to overseas databases, as well as the local subsidiaries of major corporations wishing to connect to their overseas operations through the public packet-switching networks.

Smartview has been enhanced to automatically collect billing records for each node.

The 1980 version of CCITT's X.25 standard is initially implemented to meet OTC's interconnection requirements, but the 1984 standard is also supported.

Asynchronous dialup users gain access to Pangpac via dialup modems using a user name/password logon procedure and can be presented with the help menu either automatically or on request. During the call, details of connect time, data throughput and use of special facilities are logged and can be displayed to the user if desired. At the end of programmed billing periods, records are transferred to floppy disk and passed on to the PTT's data centre for billing generation.

Private network links 89 nodes

SYDNEY — Treading softly for fear of more sensationalist press comment that would pit it against Telecom, Mayne Nickless Computer Services has quietly introduced Australia's first nationwide private packet-switching network, Maynenet.

Maynenet, using X.25 equipment and proprietary software from US specialist Tymnet, operates over leased Telecom DDS (digital data service) lines to link 89 nodes spread from Cairns to Kalgoorlie, with multiple access points in capital cities.

It is aimed at users seeking access to Mayne Nickless bureau processing services as well as at customers requiring interconnection of remote branches. Early customers include the Australia-wide Hertz rental agencies and the Meat and Livestock Association, which uses Maynenet for its Calm (computer-aided livestock marketing) auction system. Other users are Monier and Volvo, who link branches to Mayne Nickless' bureau processors for accounting, order-entry and invoicing applications.

According to Paul Morris, network market manager, Maynenet is ideal for users requiring remote asynchronous micro-host connections.

He said Tymnet's software theoretically supported up to 15 simultaneous PC-to-host connections and contained a very good character-mode translator that made the PC look like an expensive host terminal. Customers can use standard PC communications packages such as Crosstalk Mark Four or Microsoft Access, said Morris.

Tymnet's Micro-Engine X.25 processors form the end points of the network for dialup users. Local access nodes in the capitals total 27, but customers can also use dedicated Micro- and Mini-Engines to access the system. There are about a dozen such users in Sydney, some 20 in Melbourne and 10 in Brisbane, according to the company. Each Micro-Engine can handle 16 ports and supports asynchronous and byte-synchronous protocols.

A mix of DDS lines is used, from 48K-bit/sec down to 9.6K-bit/sec leased lines. Customers can opt for dialup connection or dedicated links. An unspecified hourly charge is levied for dialup users, but there are no volume charges. Dedicated line users pay a flat monthly charge.

Maynenet spokesmen make much of the network's security features: according to Morris, transmissions are scrambled internally by the Tymnet engines, user and privilege passwords are encrypted and there are restrictions on where and how people can get into the network and how they can use it. "Even if someone hooked up his own Tymnet engine we could detect this," said Morris.

He also stressed Maynenet's error-detection and correction capacity, which he said let users send files safely across normally unprotected links.

Referring to a recent report in The Australian Financial Review that appeared to place Maynenet in an adversary position to Telecom, national marketing manager David Thornton said the company was grateful to the carrier for having relaxed its regulations that made value-added services such as Maynenet possible.

He stressed that Maynenet was "not competitive but dependent on Telecom" and was intended for customers who sought "a one-stop shop" for their computing and communications needs. This included electronic mail and backup processing facilities. A number of large customers were already using the service, with many of them connecting remote branches to Mayne Nickless bureau processing facility.

Thornton said advantages of using Maynenet were also those where "we demonstrably add value": superior security features including encryption; and detailed billing capabilities, such as by time, by user, etc. This made it easy for users to re-bill customers, for example.

Security features included constant monitoring of nodes to check for "ghosts" and "hackers".

Paul Morris . . . 'Maynenet ideal for users requiring remote asynchronous micro-host connections'

Ram drought hits Hartley

HONG KONG — This is the year of the dragon, but as far as computer and communications (C&C) equipment makers are concerned, it might more appropriately be termed the year of the Ram: shortages are so bad that C&C vendors are reduced to paying premiums on the spot market.

David Hartley reports that Micron, the only US-based Ram maker, has cut Asian customers' orders 70 per cent and Japanese and Korean memory makers are supplying on allocation only. Prices doubled from December to late February and more than tripled in nine months, according to Hartley, who said his Hong Kong company, Banksia Information Technology, was besieged by people calling, sending faxes or telexes from all over the world seeking Ram supplies. The Ram chasers included a major US memory board maker.

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AIIA tips $1billion flow-on on from deregulation

CANBERRA — Removing even some of Telecom's present monopoly powers would create an $A800 million expansion of the market for telecommunications goods and services, according to an industry survey.

The Australian Information Industry Association (AIIA), surveying 48 companies with an aggregate revenue of almost $A4000 million, estimated that Telecom itself would also benefit, increasing revenue "by several hundred million dollars through increased usage of its basic services".

CPE, VAS to benefit

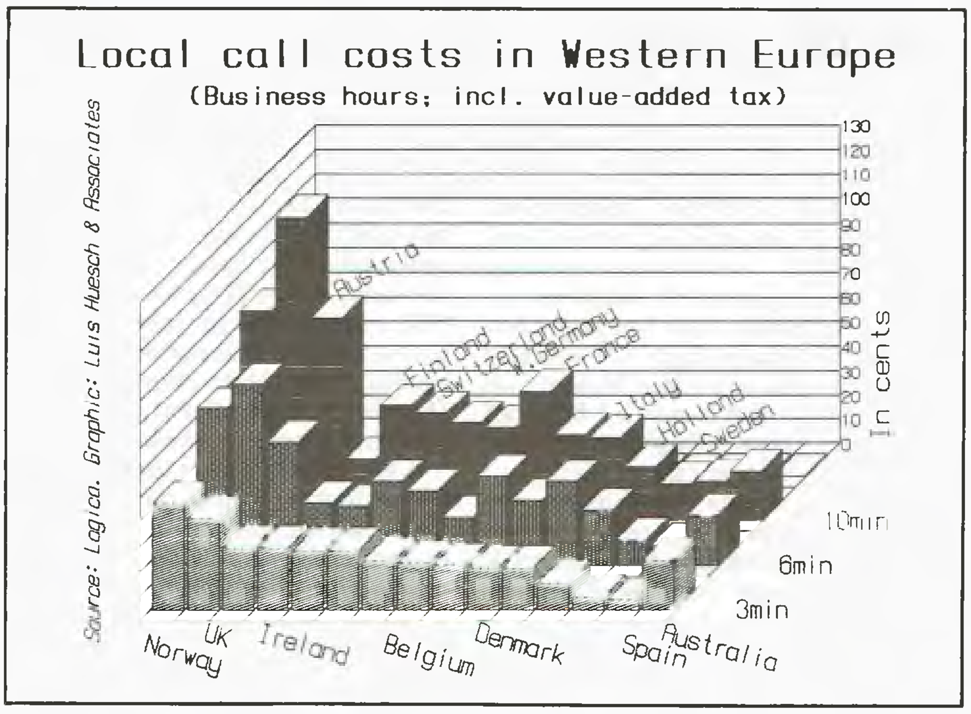
Overall, economic benefits from the removal of present regulations in the customer premises equipment (CPE) and value-added services (Vas) areas were calculated to include:

- ■ An $A800 million expansion of the telecommunications goods and services market;
- ■ New exports of more than $A200 million;
- ■ New investments of almost $A150 million, and
- ■ Additional employment for more than 4500 people.

The survey was undertaken against the background of the current review of telecommunications policy by the Department of Transport and Communications, expected to go before the government shortly. (Evans' options — page 1)

AIIA executive director Bob Mounic, releasing the findings late last month, commented that "there is no doubt that the results of our survey are extremely conservative and that opening up telecommunications to fair competition will generate substantial and long-term benefits to the country".

Such growth had occurred in all other environments where there had been deregulation, Mounic noted, adding that "AIIA therefore believes the government should recognise the clear benefits which will flow from liberalisation of the telecommunications environment, and act accordingly".



Source: Logica. Graphic: Luis Huesch & Associates

Bob Mounic . . . survey 'extremely conservative'

Atug launch for switching Pad

DATACRAFT Australia is using Atug'88 to release the Smartnet 4000 Switching Pad, an addition to the Telematics/PC1 range that fills out the mid-to-lower end of the Smartnet 2000 and 3000 Series.

The Smartnet 4000 is described as an entry-level full function async Pad/switching Pad based on an Intel 80186 processor with 512K-bytes of Ram, upgradable to 1M-byte. It provides up to 10 X.25 links with 4 to 16 asynchronous channels, with data rate of up to 9.6K-bit/sec.

The Smartnet 4000 has 3½in disk drive and is fully software configurable. Software architecture and command structure is the same as on the 2000 and 3000 Series.

Network management is provided by the Smartview NMS package, implemented on an IBM PC. Smartview provides a central operator with the ability to monitor network performance and control configurations over the entire Smartnet product range. The Smartnet 4000 costs less than $A5000 depending on configuration.

4

WHY IT PAYS TO GO FROM

Many of Australia's most respected and successful organisations rely on CASE communications equipment for their data networks. And it's little wonder.

A full service.

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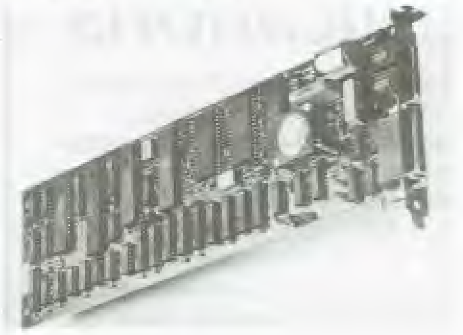
Telecom builds its own modems

BRISBANE—The Telecom workshops in Brisbane have begun manufacture of the Gemini 1000 V21/V22 Hayes-compatible autodial internal modem for Toshiba T1000 laptop computers used by Telecom.

Adrian Millard, supervising engineer in the business systems engineering branch, said: "It is designed to slot into the T1000's expansion port and is intended for use in Telecom's own laptops, which Telecom uses extensively for purposes such as field diagnostic testing, data logging, traffic survey and as a standard desktop management tool where they can provide access to the Keylink electronic messaging system."

Asked if Telecom developed the board in partnership with Toshiba, Millard replied: "No, we developed it for our own use. It was the next logical step after developing the Gemini 1100 modem for the Toshiba T1000, and the version for the PC/AT.



A PC modem card . . . will Telecom start playing this volatile market.

"Telecom has no intention to sell the Gemini, except perhaps in cases of specific request. Any commercial prospects will be determined by Toshiba".

Netcomm managing director Chris Howells said he would "welcome any effort by Telecom to acquire technology which makes Australia more competitive".

But Howells, whose company has submitted a tender for a range of low- and mid-range modems to Telecom, said it would appear to be "a gross misuse of national resources" for Telecom to make modems for laptops.

He said Netcomm was making modems in such volume and enjoyed such discounts on components that it was 'highly unlikely ' that Telecom could produce modems as cheaply.

Any such move would conflict with Telecom managing director Mel Ward's stated corporate policy of buying equipment from local manufacturers "if necessary at a premium", said Howells.

On the other hand the modem exercise could be part of "a Machiavellian thrust" to enter the commercial modem market.

Girding for the switch service battle

MELBOURNE — Telecom has begun cutting over a sophisticated new PABX maintenance support system. Called Horizon, the $A4 million-plus system is based on Hewlett-Packard hardware and software and aims at a dramatic increase in the responsiveness and service options available under PABX maintenance.

Trevor Poussard, manager of the national PABX maintenance division, said Horizon would be launched as a customer offering "within the next six months".

He was understandably guarded in answering leading questions about whether the operation could stand alone as a business if and when Telecom is forced to yield up its existing monopoly in that area. But Poussard said the 500-strong PABX maintenance division was now "highly focused as a business . . . geared up to give customers a choice."

At present Telecom is solely responsible for maintaining Australia's 23,000-plus installed PABXs, now estimated to be growing at the rate of some 2500 a year.

The maintenance division was preparing a number of guaranteed service options, including 24-hour service, as well as "highly customised" maintenance proposals for corporate customers, said Poussard.

Horizon, initially run on a HP 3000 series mini with software based on Hewlett-Packard's own internal service system, but largely modified by the vendor to suit Telecom's requirement, was cut over in Melbourne in March and will be progressively extended to the other capitals.

The system, described by Poussard as the most customer-responsive service ever offered by Telecom, controls the entire gamut of maintenance requirements, from customer queueing and staff deployment to spares tracking. Horizon also interfaces with a new Telecom Corporate Fault Reporting Bureau system that is specifically aimed at big business clients, said Poussard.

Greener pastures for RBOCs

WASHINGTON — US regional Bell operating companies have been given the green light to transmit information if it is part of a gateway to an information service. This opens the way to RBOCs offering electronic mail and voice mail.

Under a 66-page decision by US District Court Judge Harold Greene last month, RBOCs may offer new services that do not involve alteration of content. The services include, apart from e-mail and voice messaging:

- Data transmission;
- Address translation;
- Protocol conversion;
- Billing management, as well as
- "Introductory information content".

The RBOCs are still prevented from generating, manipulating the content of information, or "constructing navigable information services", such as offered by The Source, Compuserve and others.

Greene said that since the RBOCs had "no experience with the generation of information", they could flourish in this area "only if they used their telecommunications monopolies to disadvantage competitors in these markets".

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EDITORIAL

Australia's Year of Communications

THIS, for Australia, has to be the Year of Communications: the stage is set for at least a modicum of re-regulation, new alliances are shaping up that will shake our industry and local and overseas vendors busy preparing for a new regulatory climate.

Apart from the spokesmen for industry and user groups, everybody seems content to keep mum right now, waiting no doubt for the impending pronouncement from Canberra. But behind the scenes there is hectic activity as the players jockey for position. Expect to see US telecommunications giant AT&T bring its big switches to Australia; expect to see German multinational Siemens throw some of the weight of its $US2000 million ready cash reserves behind a renewed attempt to make headway in the Australian market in its own right; look forward to a bevy of ISDN products from pioneers in the business and be ready to see local companies make headway overseas with Australian-designed goods including our own communications chips.

A splendid occasion to see some such products, to probe some of the new posturing, will come at the Atug show and conference in Melbourne, which this year sees a record 70-odd vendors and distributors represented. A number of them are coming from a quite successful Communications 88 show at Sydney's splendid new exhibition centre at Darling Harbor.

It is a pity that some major companies have seen fit to withdraw — or abstain — from making a corporate splash at Australia's premier communications show. Siemens, which had planned a big display of Hicom ISDN demonstration, is one of them. Alactel STC Australia, for reasons of its own, is another. And Hewlett-Packard, certainly not a lightweight in the connectivity business, found pressing commitments prevented it from exhibiting. Here's hoping that all these, and lots more, companies will make a stand at Atug 89 in Sydney. All of us, not only the users, stand to benefit.

Meanwhile Communications World joins heartily in the chorus wishing the Atug show and conference a roaring success.

Phone charge comparisons 'misleading'

From David Skea
Principal Consultant,
Logica

THE article in News and Trends on page 6 of the March edition entitled "France leads the way in phone cuts", compares apples and oranges and as a result draws some incorrect conclusions.

Certainly France did reduce its telephone tariffs in 1987, but at the same time the French government introduced an 18.6 per cent Value Added Tax on all telecommunication services. This was done in such a way that the new telecommunications charges, inclusive of the Value Added Tax, were approximately equal to the old charges before tax. This means that the amount paid by residential subscribers has remained unchanged. However, the cost to those commercial users who can pass on the tax to their customers, has been reduced. Our information is that this reduction has been made possible by the removal of the French PTT subsidy to the French electronics industry.

Even the graph of local call charges across the world is not as it seems at first sight, as it ignores the Value Added Tax imposed by most European governments. Also, in the case of the United Kingdom it appears that the afternoon or cheap business rate has been shown.

Similar anomalies appear in the companion graph STD and ISD tariffs of key nations.

The enclosed table, Costs of Meter Units and Local Calls, shows the cost of a local call in various European countries including all applicable taxes. Even so, this table can be misleading as it does not attempt to relate the cost of a call to the average wage or to the quality of the service offered. Nor does it differentiate between those users who have to pay the full VAT and those who can recoup the tax.

It is also misleading to highlight a huge (41.7 per cent) reduction in France's intercontinental tariffs without giving some indication of the relative level of the French tariffs to similar services in the international marketplace. A three-minute call to Australia from France now costs the equivalent of $A13.46, a reduction of 50 cents or 3.4 per cent from the February 1987 tariff. The cost for a similar call from Australia to France is $A5.40.

I am not surprised that the French PTT has found it necessary to reduce its international tariffs.

Costs of Meter Units and Local Calls in Western Europe

COUNTRY	PRICE OF METER UNIT $A (1987 RATES) (EXCL TVA)	TVA **	APPROXIMATE TIME FOR ONE METER UNIT	COST OF A LOCAL CALL IN BUSINESS HOURS, TVA INCLUDED		
				3Min	6Min	10Min
Austria	$0.085 *	-	1 min	25c	50c	83c
Belgium	$0.198 *	19%	6 mins	24c	24c	47c
Denmark	$0.070 *	22%	2.4 mins	17c	26c	35c
Finland	$0.088 *	16%	3.3 mins	24c	34c	44c
France	$0.150 *	18.6%	5.9 mins	18c	36c	53c
Germany	$0.189 *	-	7.9 mins	19c	19c	38c
Ireland	$0.246	-	Untimed	25c	25c	25c
Italy	$0.142 *	18%	5.9 mins	17c	34c	34c
Netherlands	$0.110 *	-	5 mins	11c	22c	22c
Norway	$0.178 †	20%	2.9 mins	43c	64c	86c
Spain	$0.034 *	12%	3 mins	4c	8c	16c
Sweden	$0.053 *	-	4 mins	5c	10c	15c
Switzerland	$0.100 *	-	4 mins	20c	30c	40c
United Kingdom	$0.108 *	15%	1 min	37c	74c	$1.24
Australia	$0.20	-	Untimed	20c	20c	20c

* Timed local calls
† Timed local calls in business hours only; all other times untimed
** Value added tax (VAT in UK, TVA in continental Europe).
Source: TARIFICA - Logica's Western Europe Telecommunications Information Service.

Notes: Currency conversions made at the buying rates published in the *Financial Review* February 16. The area served by a "local call" varies between countries. Typically a local call covers an area of radius 25km although in some countries and cities, this may be 10km. Other countries equate a local call area to a specific number of subscribers. That is, the local area relates to the interconnectivity offered. Rates shown are the maximum that may be applied. For example in the United Kingdom the rate shown is the morning business hour rate (0900-1300, Mon-Fri). This is 1½ times the afternoon business hour rate, and six times the rate applicable at all other times.

User seeks more data on communications

From Uday Lad
Assistant Director
Department of Administrative Services
Technical Services Section,
9 Torrens St, Braddon, ACT 2601.

WITH reference to the article published in *Communications World*, under the heading Network Management (pages 12 and 13, February 1988 issue), I am trying to obtain further information on communications processors.

I need more information on the table on page 13, with reference to IBM/IBM-PCM communications processors marketed in Australia (other than IBM and Amdahl).

(Perhaps the vendors/distributors among our readers may be able to help? Ed.)

COMMUNICATIONS WORLD

Editor: Luis Huesch
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Communications World is part of the IDG Online News Service, which includes sister publications *Network World* and *Le Monde des Telecoms.*
ADVERTISING:
National Advertising Manager: Terry Swan
Western Australia: Winkie Corfield (09) 388 1828
Co-ordinator: Janice Jones
CIRCULATION:
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MANAGEMENT:
Publisher: Luis Huesch
General Manager Barbara Howell
Communications World is published by IDG Communications Pty Ltd
Managing Director: Alan Power
Directors: Patrick J McGovern
Axel Leblois

IDG Communications Pty Ltd also publishes: *Computerworld Australia; Australian PC World; Australian Macworld; Digital World; Government computer news.*

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Communications World is published monthly and distributed to qualified charter subscribers in the communications industry.

Printed by Rural Press Printing, North Richmond.
(045) 70-4444

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COMMUNICATIONS

Campus to be linked in fibre-optic network

SYDNEY — The University of NSW's computer science department is installing a $A1 million Apollo Domain workstation network of two 12M-bit/sec token-passing rings — and is getting ready to link the entire campus in a 100M-bit/sec fibre-optic backbone net.

The Domain network, consisting of an undergraduate ring and a post-graduate ring, will provide access to more than 100 Mips of processing power and more than 9G-bytes of disk storage. The main application, according to the department's Dr Keith Burston, will be in the undergraduate teaching area.

"We will be using the workstations as advanced software development environments to teach high-level languages such as Modula-2, Pascal, C, Prolog, Ada and functional programming languages as well as teaching the software engineering and specification skills that are essential for software development," he said.

Apollo claims that its system can run very large applications written in Fortran, C or Pascal. "Applications that exist on mainframes or superminis can be converted to the Domain system with a minimum of effort," the vendor said.

The undergraduate ring supports 48 DN3000 workstations with 4M-bytes of main memory and 72M-bytes of hard disk storage each, while the postgraduate ring links 32 of the workstations with twice as much main memory and mass storage.

FDDI bridges

The workstations are physically linked by standard 75 ohm coax and are interconnected by the department's own standard Ethernet, which has bridges to the emerging campus-wide optic fibre FDDI-standard (fibre distributed data interface) wide-area network (Wan).

Burston said the token ring had been chosen because it will be easy to expand the system to 200 workstations.

The undergraduate ring terminates at a Domain/Bridge router node, consisting of two DN4000 server processors, which run the token ring and serve as the Ethernet gateway. Connection to the Ethernet coax is made by standard-15 pin Dix board connector used with an external transceiver drop cable. This "Internet" hardware/software solution is said to provide transparent connection for users to stations on other rings.

Apollo's own base-level protocol reportedly provides transparent inter/intra ring sharing of files, data and ring-resident processing power (CPU). Apollo claims its new Domain/OS operating system "integrates Networking Computing Architecture (NCS) to deliver the industry's only true distributed Unix operating system".

A key feature of the Domain ring architecture is a distributed "object storage system," in which the structure of virtual memory is based on the "object", a 32-bit, byte-addressable virtual address space accessible from anywhere in the network. Objects are generalisations of data files, executable modules, bit maps, directories, and other system entities.

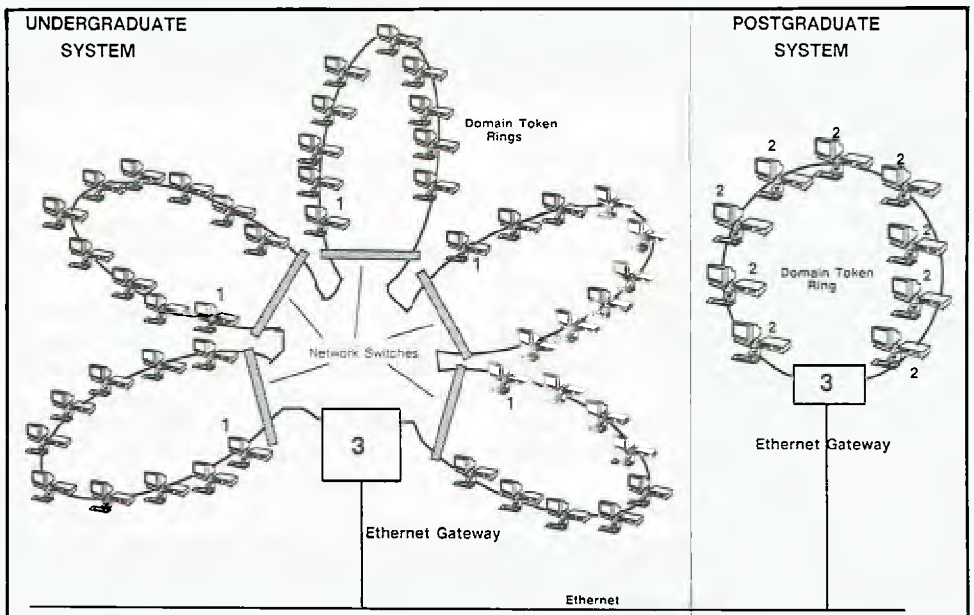
The system assigns a 64-bit unique identifier string (UID), and operates without regard to the "object's" function or location in the network. Each station has its own routing table which charts the quickest inter-ring path via the routing node.

The two Domain rings are interfaced to the university's multi-vendor environment using the Transaction Control Protocol/Internet Protocol (TCP/IP). Senior network manager Phil Cohen described the campus Lan as a "disparate system, connecting such machines as DEC Vax PDP/11, IBM 3090 and Prime".

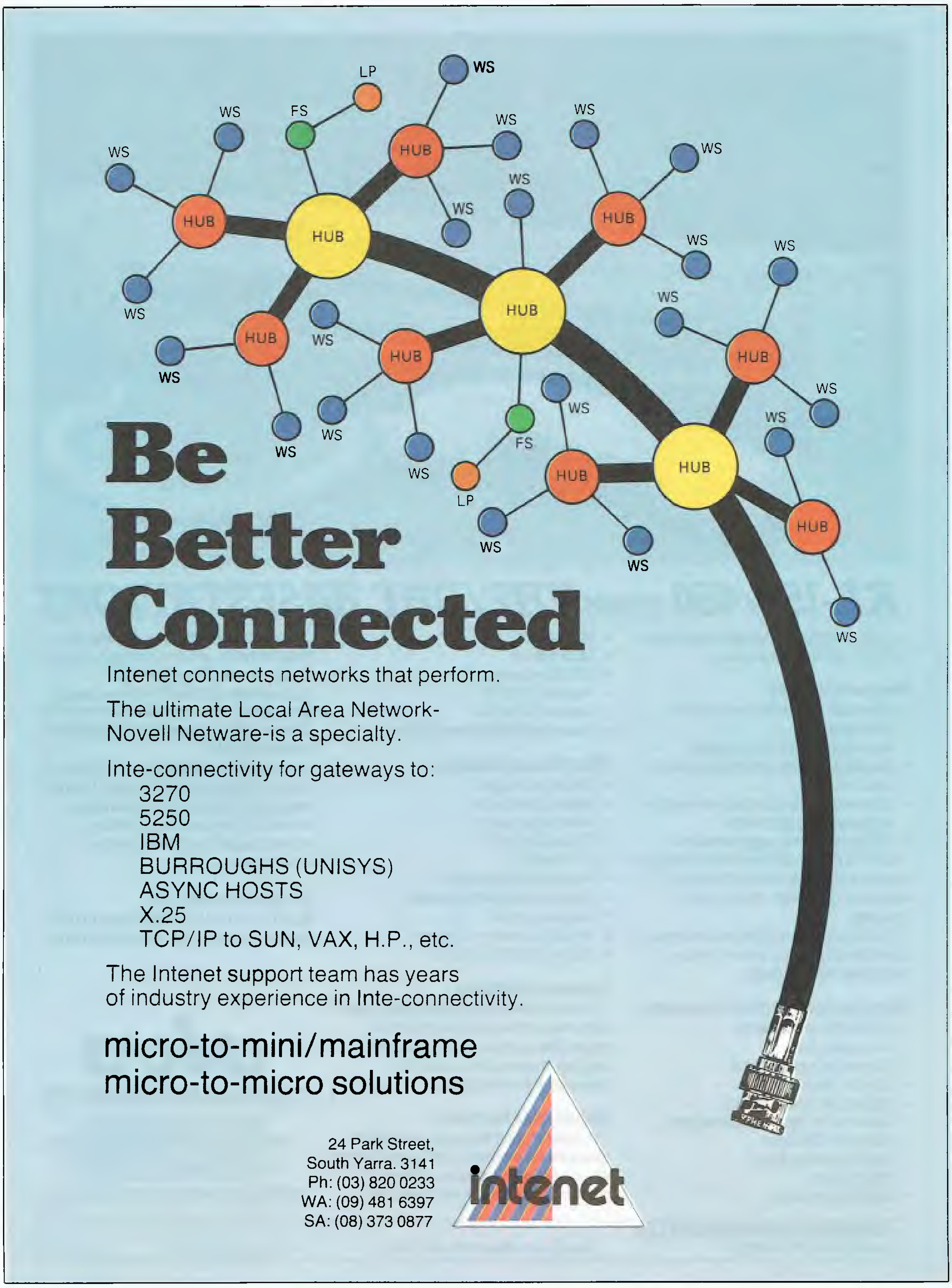
Cohen is overseeing installation of the optical fibre backbone Wan.

The Wan is configured in dual star topology with six fibre pairs extended between the two centres and three fibre pairs drawn to the radial endpoints. One pair of fibres has been allocated to the IEEE 803.3 10M-bit/sec Ethernet system which will connect various computer centre sites.

Cohen said the new Domain network represented "a very powerful system, capable of utilising the Ethernet to its limits".



1. DN3000, 4MB, 72MB, 15" Monochrome Workstation
2. DN3000, 4MB, 155MB, 19" Monochrome Workstation
3. DN4000, 8MB, 348MB Hard Disk, 19" Monochrome Workstation / Server



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Banyan Vines on line at V/line

MELBOURNE — Victoria's State Rail Transport Authority, V/Line, has adopted the Virtual Networking System (Vines) to network some 900 personal computers to provide a wide range of communications and personal computing facilities to about 890 users. The V/Line installation — one of the first Vines sites in Australia, according to Banyan distributor Datacraft — provides a comprehensive integrated communications solution to V/Line and incorporates the following advanced facilities:

- 32 concurrent sessions to the authority's Facom mainframe;
- IBM Netbios service;
- Asynchronous terminal emulation;
- File and printer sharing;
- Electronic mail system;
- Remote dialin facility.

V/Line uses Micom Interlan's Ethernet, which is supported by Vines, along with a number of other Lans including the IBM Token Ring Network. Different topologies can be supported simultaneously.

The authority has installed Banyan Network Server as communications server for Facom connectivity, as well as serving local PC workstations, desktop server as a workstation server, and a 286/PC AT server networking smaller work groups of PCs. All are connected as one virtual network.

According to Ken Fox, manager of V/Line's Microcentre, Banyan was selected for a variety of reasons.

"It fitted into our corporate requirements and, most important, it is easy to use and completely transparent to users," he said. "This means that inexperienced PC users who may not necessarily know any more than their own applications, do not become confused by the network environment.

"There are no new commands to be learned under Vines. Network facilities are made to appear as an extension to PC facilities."

Applications tested running over the network include dBase III Plus, Multimate, Lotus, Clipper, Microsoft Chart, Project, Acad and Sidekick.

Banyan's ability to connect multiple servers, both remotely and locally, into a large "virtual" network was an important factor to V/Line. Such connections are again transparent to users, by virtue of Banyan's global naming and addressing system — Street Talk.

Street Talk provides location independence to users, peripherals, files and services, so that administration of the network becomes simple.

In order to use network facilities such as mainframe connections, shared files or printers, users need only know the name of that facility. Street Talk provides extensive "browse" functions to allow network users to view resources not only in relation to their own local server but also relative to all other connected servers and Lans. Three levels of security prevent unauthorised access to resources. Each user is given a profile which dictates his or her access to file volumes, printers, host computers and other services on the network. Simple menus can be provided to users upon log-in to Vines.

"When we were assessing our requirements we looked at several alternative systems but Banyan outperformed its competitors," Fox said.

"In addition, Datacraft has the capacity to supply and support the system locally and this is an important comfort factor."

V/Line's Microcentre is the virtual nerve centre of the authority's personal computing and management information services. Its PC base is growing by about 10 systems a month and its major responsibilities include:

- Systems development;
- Data transfers (micro-micro; micro-mainframe; IBM System /34/36 — micro/mainframe);
- Machine configurations;
- Machine and equipment purchasing strategies;
- Creation and maintenance of software and hardware library;
- Micro-mainframe links (terminal emulation and file transfer);
- Hardware maintenance and technical support;
- User education and
- Research and development.

"The virtual network concept sold us on Banyan," Fox said. "Banyan was the first product to provide Fujitsu Facom connectivity without problems, enabling file transfer capabilities; its mail facility is superior to anything else; the server-to-server chat facility is excellent, and the ability to support multiple Lan standards has allowed us to merge existing Lans."

Electronic mail group formed

ZURICH, Switzerland — Representatives of users, vendors, service providers and PTTs launched the European Electronic Mail Association (EEMA) here recently to promote electronic mail and message handling.

Twelve organisations, Air Call; Digital Equipment Corporation; Geomail; ICL; The Irish PTT; One-to-One; Philips; the Rotterdam School of Management; Softlab; Sydney Telecommunications; British Telecom and Wang, are founding members. I Zandleven, of Philips International, was elected chairman of the initiative board.

WA export deal

PERTH — As part of its export drive Comsys, of Western Australia, has signed an international agreement with Promtek, a large telecommunications company in Malaysia.

The agreement secures local Malay (Bumi Putra) representation and provides the basis for joint ventures between the two companies.

Short-term prospects include two major projects for STM Malaysia, the recently privatised government telecommunications authority.

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Stratus streamlines credit, travel systems

Tias upgrade staff team member Louise Cooper with Stratus

By David Beynon

SYDNEY — American Express expects to improve dramatically online credit authorisation with a new 32- bit supermini-based XA2000 continuous processing system.

Senior vice-president of American Express, Alberto Modolo, said: "The installation is part of a worldwide strategy to streamline credit authorisation systems. The aim is to implement a system of regional authorisation."

Peter Bailey, manager transaction services, added: "We are moving towards online authorisation for merchants. During 1988, we will be implementing host connections for merchants and handling far higher electronic transactions volumes than currently. The XA2000 gives us the capability to handle these transaction volumes."

The company declined to provide details of the XA2000 installation — which includes ON/2 software from Shared Financial Services Pty Ltd. It is the 15th site of a Stratus Fault Tolerant computer system by Olivetti Australia.

Tias switches to Stratus

One of Olivetti's earlier customers is Travel Industry Automated Systems (Tias) who took delivery of a Stratus XA600 early in 1987.

Sydney-based Tias operates a multi-access switch currently running on Raytheon equipment (RDS 7500), which allows Australian travel agents to connect to the reservation networks of over 35 airlines (see diagram). Tias technical manager Michel Radecki said: "Our first Stratus system the XA600 was delivered about 14 months ago, and installation is proceding in two stages: We began with replacement of the Raytheon-based applications type queuing system which included the development of common language access facilities for all terminals connected to the network.

"After development is complete the applications load of the system will be transferred to a XA2000 computer. The RDS will then remain as a communications front-end, handling a mix of communications protocols until it is replaced by Stratus equipment."

The system can be accessed from PTS1000 controlled dumb terminals, Viatel, and also, "special PCs and dialup terminals". Radecki said: "The new system has a lot more processing power allowing for new functionalities, such as sophisticated queuing access."

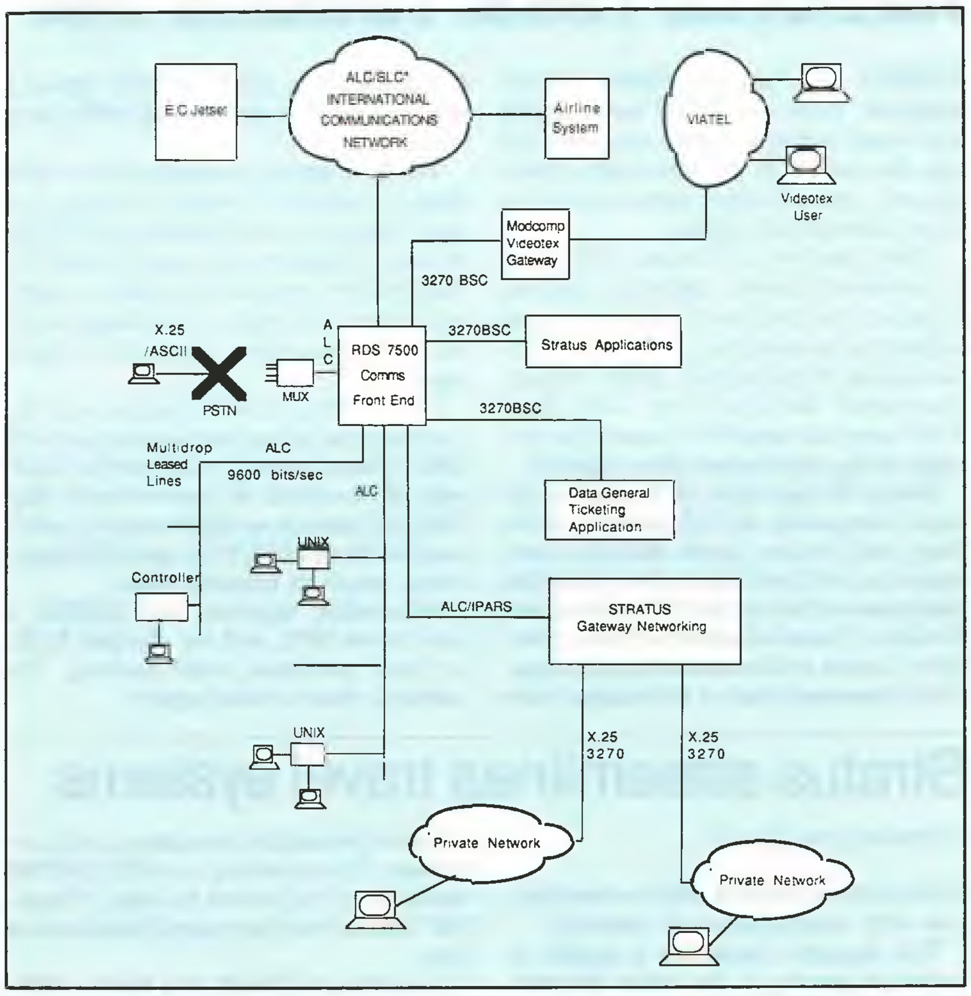
In this context, a queue is defined as "a group of messages sent by airlines to agents and which is used to advise such information as ticketing requirements or schedule changes".

Connection to Tias is achieved in various ways, but most commonly through 9600 bit/sec dedicated lines. Multidrop lines connect to more than 700 agents throughout Australia. The total number of terminals directly connected is about 2300.

The multidropped terminals need to offer support for the Airline Link Control (ALC) 7-bit protocol and the International Passenger Access Reservations (Ipars) code set.

External organisations are handled by the Tias network gateway as though they consisted of networks of 3270 type terminal equipment driven in an EBCDIC environment. The gateway converts the ALC (IBM 1006) protocol received from the RDS 7500 message switch to the 3270/

(Continued page 10)



The Tias network . . . connected to more than 700 agents

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1500 agents linked by national reservations net

SYDNEY — Running slightly behind schedule, more than 1500 travel agents and travel industry service providers are due this month to go online with a new ground content booking system claimed to have international appeal.

Allen Dewhirst, a director of National Reservation Systems, said at the Sydney launch of the company's ground content reservation system that some 800 member agents of the airlines' Travel Industry Automated Services (Tias) with about 2100 terminals would be among the first users of the new system from April 8.

Some 80 per cent of Australia's car rental companies and 65 per cent of the four- and five-star hotels had also been signed up and had linked their Australian databases to Tias via the NRS system, said Dewhirst. These included the Hilton, Sheraton, Regent and Intercontinental groups. The Homestead chain of 450 motels is also a user, and has put in an IBM Series/1 mini to handle its own internal traffic using NRS.

The NRS system is operated by the ANZ Bank's Electronic Network Services and uses Telecom's new Tran$end EFT/POS network. Suppliers are linked to the ENS Tandem host computer for realtime updating of their information databases, which are at the same time accessible to travel agents.

Bruce Pilley, a NRS director, said the company had a long-term agreement with ENS, whose system could handle hundreds of thousands of transactions a day. Only at Christmas would the system, which runs the bank's EFT/POS and ATM operations, reach its capacity limits.

Information suppliers pay $A1500 a year to use NRS, and are charged $3.50 for each confirmed hotel booking. The service is free to travel agents.

Bruce Pilley (right) and Allen Dewhirst . . . 'a world first with unique potential'

Stratus streamlines travel systems

(Continued from page 9)

X.25 protocol which is used to communicate with external terminal networks.

The opposite conversion is applied to messages passing in the other direction. Intelligent C109 line cards provide for physical connection to the RDS switch via the ALC protocol and to the external organisation's computer via X.25.

The IBM 1006 screen is represented directly on the 3270 display after "minimal reformatting".

Each organisation is allocated a maximum number of sessions at Tias' discretion. This allocation, according to Redecki, can be dynamically changed, "to ensure the terminals at the organisations are serviced adequately", adding "there are no theoretical limits but practical limits will be imposed by what the hardware can handle in an optimum way."

Future transaction throughput can be increased, by connecting up to 32 XA2000 modules in one system by using "Stratalink", Stratus' own high-speed inter-module bus.

According to Olivetti, the Stratus wide-area networking system, Stratanet, permits thousands of systems ranging from Ascii terminals, PCs, to fully-distributed computer networks including IBM SNA to be interconnected through leased lines or the Austpac Network.

"Stratanet could be used to allow Tias to decentralise operations. For instance a Melbourne-based Stratus system could service the Victorian users access to Australian and Ansett Airlines without the data having to be first transmitted to Sydney. The reservation computers for Ansett and Australian are located in Melbourne."

Olivetti expects to instal a further 10 Stratus systems during 1988.

Bank goes fibre for internal network linking mainframe, PABX

MELBOURNE—The National Australia Bank has installed an optical fibre network at one of its major administrative centres in Melbourne.

The project involved internal reticulation of fibre-optic cable for building backbone internal cabling associated with an advanced building cabling system.

Olex Cables supplied and managed the installation, the fibre-optic components, ancillary rack equipment, and the ducting of the 32-core cable and splicing of the standard multi-mode (50-micron) fibres.

The fibre-optic network and the IBM building cabling system interconnect IBM terminals and departmental systems with the centre's IBM mainframe, remote Line interface Modules of an Ericsson MD110 PABX, and supports the building control.

Scott Tanner, communications consultant with the National Australia Bank's information services centre, said the bank is "extremely satisfied" with the way the new system is operating.

Asked if security was a major factor in the National Bank's choice of optical fibre, Scott Tanner said: "Security is a feature of the optic fibre, but our main reason for using the Olex cable was that it offered most cost-effective bandwidth." He described the installation cost for the fibre and associated equipment as "a cheap $A90,000".

"It is estimated that the total backbone fibre bandwidth of the new network is 3.2GHz in either direction using a single wavelength," he said.

"The networking equipment includes 2MHz BSP (Bisynchronous Process) Multiplexers, and OLTEs (optical line terminating equipment) from Integrated Fibre Systems — (IFS) S8802 and IFS MX422—located on each floor." An IFS S8802 forms the fibre/coax interface into the 2MHz PABX link (Coax-G03).

"Network control is invisible to building cabling strategy." Tanner said, "the PABX manages its own communications, while the IBM mainframe host runs Netmaster, NCSS, and NPTA, all under Vtam."

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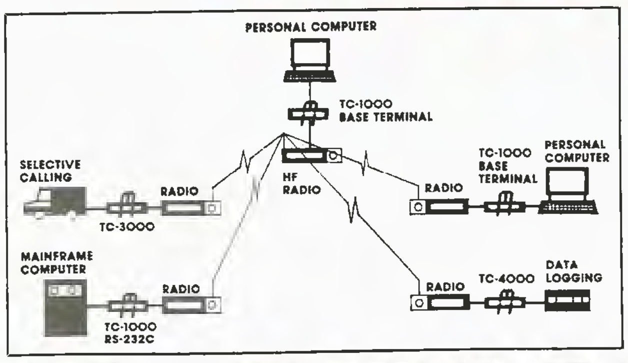

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ELECTRONICS

601 to get 2M-bit networking

MELBOURNE — Siemens is to introduce 2M-bit PCM 30-channel digital networking capability to its System 601 PABX in the second half of this year, allowing users of the switch to establish private islands of pre-ISDN networks that could eventually be linked by the public Integrated Services Digital Network.

A carefully worded statement from Siemens Australia stressed that the 601 enhancement, one of a series of planned new features, in no way detracted from the telecommunications giant's marketing plans for its Hicom ISDN switch. (See story on page 1.)

Asked about Siemens' introduction of its Cornet (corporate networking) ISDN primary rate interface for the US version of the 601, sold as the Saturn range in North America, PABX marketing manager Ben Braeuer said: "Siemens sees the introduction of 2M-bit link capability for System 601 to be a major initiative in persuading customers with networking requirements to purchase our highly successful switch.

"The Australian market readily accepted the sophisticated voice/data features of System 601 in a wide range of 'single-PABX' business applications. The ability to interconnect systems via a 2M-bit public network link allows the user to extend that proven inhouse connectivity into the domain of modern digital networking.

"Since its introduction two years ago some 145 PABX 601 Systems with 50,000 extensions have been installed in Australian businesses. Manufactured by Siemens at its Bayswater (Melbourne) factory, System 601 is distributed throughout Australia by Telecom," Braeuer said in a prepared statement.

Cornet includes Siemens' proprietary version of D-channel messaging formats the vendor is pushing within the information industry and proposing as a CCITT standard. A final standard for the D-channel message set, which specifies how various ISDN-compatible devices communicate, is at least four years away, but the company claims its Cornet implementation allows incremental alteration to track development of the standard.

DCA teams with Siemens, unveils WAN products

By Josh Gonze

HANOVER, West Germany — Digital Communications Associates (DCA) will resell Siemens packet-switching equipment in the US and let the West German company market its System 9000 high-order (T1/M2) multiplexers internationally, DCA announced at the CeBIT '88 computer trade fair here.

DCA also used CeBit to unveil products that tie its Series 300 statistical multiplexer to TCP/IP-based (Transmission Control Protocol/Internet Protocol) local networks — claiming a first for the technology — as well as a new terminal server for Ethernets and a new protocol converter.

Under the agreement, Siemens gains nonexclusive rights to the System 9000 in all countries except the US, the UK, Japan and Canada. Within the US, DCA already has four resellers for the top-of-the-line multiplexer, including Bellsouth, Racal-Milgo, Northern Telecom and Tymnet.

(Continued page 53)

Sun Sparcs Unix swell

SAN FRANCISCO — A groundswell of hardware vendor support is building up for Sun's Sparc chip and the merged Sun/AT&T Unix V, according to Sun president Scott McNealy, who said several major computer makers will endorse the new processing platform shortly.

Just before he cautioned industry decision-makers "not to make any major architectural decision for 90 days", giant Unisys became the latest Sparc licensee.

McNealy, speaking at the Seybold Seminars '88 conference here, described Sparc/Unix as "an alternative to the Mac, to the PC and OS/2 worlds, and to the Vax, VMS worlds.

"A lot of what I call the third world of computing will get behind this (architecture) and endorse it," he said.

Error-free data communications

CHICAGO — Tymnet McDonnell Douglas Network Systems has announced its new X.25-to-SDLC service, designed to ensure simple, error-free, economical international data communications for IBM mainframe 3270 and 5250 computers via X.75 gateways.

The service, which was announced at the Interface '88 show here, is available on the Tymnet public data communications network and on Tymnet private networks. It reportedly allows users to use X.75 gateways to enter Tymnet and communicate with mainframes running the Synchronous Data Link Control (SDLC) protocol without requiring the installation of the NCP packet switching interface. X.25-to-SDLC can be used with Tymnet's Tymdial X.25 service, which allows synchronous dialup access to Tymnet at speeds up to 9.6K-bit/sec.

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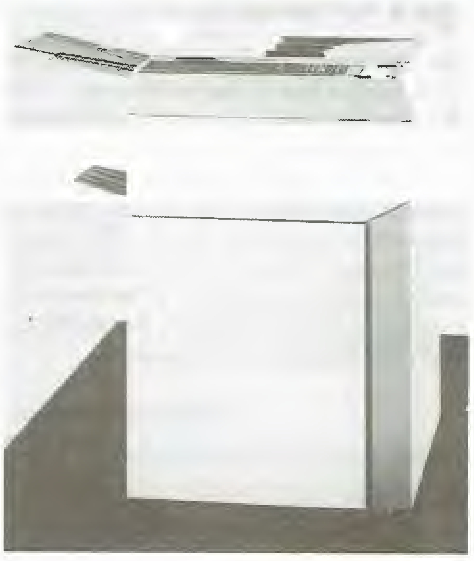
NEC readies for NTT's ISDN launch



NEC's group 4 ISDN facsimile transceiver

TOKYO—With Nippon Telegraph and Telephone Corp's commercial integrated services ditigal network (ISDN) set to start this month, major NTT supplier NEC Corp is gearing up for the new network. The Tokyo company, which has been participating in field trials in both Japan and US in conjunction with the Bell operating companies, is working on all parts of ISDN, including videotex services.

The NTT network will be a narrow-band ISDN, for which pricing has not yet been set. Nobuhiko Shimasaki, chief ISDN engineer at NEC, is concerned that pricing for the commercial network might be too high to appeal to the general public. Currently, Japan's Ministry of Posts and Telecommunications (MPT) is setting prices for the service. "It should make the price cheap to accelerate deployment," he said. "If the pricing approaches NTT's prices now, I'm afraid deployment will be slow."

NTT has held a telecommunications monopoly until recent years, and communications fees are still relatively high. Shimosaki is more optimistic about the popularity of private ISDNs for individual companies, for example, because they are not subject to MPT's price policies.

Shimosaki said that by 1995, video signals will be in vogue in broadband ISDNs, which will be run over optical fibre lines, more and more of which will be laid to subscribers' homes and offices once that becomes economically feasible.

He described a future workstation for 1995 for ISDNs that would include a 10-million pixel flat panel display, a 1G-byte hard disk drive, a 100M-byte floppy drive, an adaptive microphone and speaker array, and a wireless keyboard and mouse. The system would handle voice, data, and facsimile, which will be integrated into future workstations.

NEC was not specific about other product plans. However, it is a major supplier to NTT, which recently submitted its fiscal year 1989 business operation plan to MPT. The plan calls for having some 6.3 million local terminals and 450,000 total digital switches, 650 sections of digital transmission lines, and 53,000 leased circuits to handle data, telephone, image, and high-speed digital transmission services. NTT also asked for an increase of data communication systems to 24 units, an expansion of Type I packet switching services to 13 cities, and an expansion of Type II services to 12 cities.

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DSC unveils a '3G-Lan'

IDG News Service

SANTA CLARA, California — Targeting the need for increased file server storage and instantaneous network backup, DSC Communications has unveiled what it calls a third-generation local-area network designed to rival IBM, 3Com and Novell products.

Announced by the DSC group, which includes the former Nestar Systems, the Nexos Lan family is considered a third-generation network when compared with the initial Lans that served as printer-sharing devices and second-generation Lans that linked local devices without providing connections outside the network.

The Nexos Lan features its own network operating system; network interface cards that support token-ring, Ethernet and Arcnet; 1.3G-byte file serves; and communications gateways into the CCITT X.25 and IBM Systems Network Architecture worlds.

According to DSC officials, the Nex/OS operating system offers database engine support and support for multiple servers through a multiplexing driver.

The operating system, priced between $US1195 and $US3995, will support applications written for the Novell Netware environment.

Egyptians get bills on Alcatel software

SYDNEY — Alcatel STC Australia has won a $A440,000 order to supply its specially-tailored billing software to the Egyptian PTT, Arento, enabling users of the nation's new Egyptnet packet-switching network to be billed in their native Arabic. The company expects flow-on orders from PTTs throughout the Arab world.

Alcatel STC marketing manager Ron Spithill said the software, ASC (Accounting and Statistics Centre), was developed in Australia for use on Telecom's Austpac X.25 network, running on a Facom mainframe.

"For this Egyptian contract we redeveloped the software to produce Arabic invoices and to operate on an IBM 9375 midrange system," he said.

The order came as a sub-contract from Alcatel CIT after the French sister company won the tender to supply its new-generation DPS 2500 packet-switching equipment to Arento. According to Spithill: "Alcatel CIT is actively pursuing new markets for its DPS 2500 equipment, and the company recognises our expertise in adapting this software to suit mainframe, midrange or minicomputer installations."

AST poised to make Unix-PC-PS/2 link

IDG News Service

LOS ANGELES — AST Research is developing communications products that will provide seamless connections between Unix, PC and PS/2 environments, according to the company.

Jim McNiel, product line manager, systems marketing, said a "pretty seamless" method of connecting any Unix machine — from a Cray supercomputer on down to a Apple Macintosh running Unix — with PC and PS/2 computers is possible, using links that are either in place or in late stages of development.

The connectivity puzzle has a number of key pieces, McNiel said. At the Unix end, products such as Dosmerge and VP-IX allow Unix users to run MS-Dos applications. X-Window provides a graphical user environment that runs under Unix.

Networking functions on the Unix computers will be controlled by LMX, a Lan Manager for Unix that is being developed by Hewlett-Packard.

A PC or PS/2 can be connected through a variety of protocols, with TCP/IP or MS-Net being two of the possible protocols used. It is conceivable that a PS/2 running OS/2 can act as a server on such a Lan, with the Unix machine also handling networking functions, McNiel said.

Terminals can be hung off the network or connected with a server using 327 or 5250 emulation. PCs and PS/2s will be able to use X-Window under Dos using X-Sight from Locus Computing, McNiel said.

McNiel sees Unix becoming a unified standard rather than the somewhat splintered Unix/Xenix approaches that have created past confusion in the Unix marketplace. A uniform Unix will run all Unix or Xenix applications, he said.

AST Research is "very definitely" developing products that will "provide enhanced avenues that will make this work," McNiel said.

Shipping dates and product details were not available at press time. The company currently manufactures products for the Macintosh, PC and PS/2 computers, and DEC Vax systems.

Mac version of Netware

PROVO, Utah — Novell's long-expected Macintosh implementation of its Netware network operating system is up and running in the company's offices and should be available this summer. Sources close to the company have said Novell hopes to show the product at Comdex/Spring '88 in May. According to Darryl Miller, Novell's vice president for corporate marketing, Netware for the Mac supports the Appletalk Filing Protocol (AFP), allowing Macs to operate with the PC-based Netware server as if they were on Appleshare, while also providing Netware features such as fault tolerance and sophisticated network management. MS-Dos computers can also operate on the Netware server, according to Miller, and files can be exchanged between both types of computers. Miller claimed that the Mac user interface is retained and that writing to AFP guarantees that any applications, gateways, and bridges that work with Appleshare will also work with Netware for the Mac. Netware for the Mac is under development jointly by Novell and Dayna Communications, both in Provo.

Lan bridge plugs in ISDN standard

NORWOOD, Mass — Microcom claims a first in offering an ISDN-standard Lan-to-Lan connectivity product with its MLB/1500 local-area network bridge.

The bridge marks an important milestone for the evolving ISDN to develop a toehold in the rapidly expanding Lan market, according to a networking consultant, Larry DeBoever. "This is absolutely the right kind of application for ISDN. Many people use T1 (Megalink) bridges to connect Lans, and, basically, they (Microcom) are substituting ISDN for T1. In a year, everyone will be making them."

The bridge supports link speeds of up to 64Kbit/sec over a dialup long-distance connection between Lans, Microcom said. It also passes Lan packets regardless of what type of higher level networking protocol was used to generate them.

The MLB/1500 is made up of three parts: a wide-area network module that controls the ISDN line link between the bridges; a Lan interface module that handles the packet traffic on the Lan; and a bridge management module that receives the packets from the Lan interface module, establishes communications links, keeps track of Lan and wide-area networking statistics and controls the general operation of the system.

The bridge also employs learning and filtering algorithms to increase network efficiency.

Rationale for XDos package

MOUNTAIN VIEW, California — Users of high-end engineering workstations and Unix-based multi-user systems need Lotus spreadsheets, too. At least that is the rationale for Hunter Systems' announcement of software said to allow Motorola 68020-based Unix machines to run unmodified MS-Dos software.

The package, called XDos, works with systems such as the NCR Tower and Sun Microsystems Sun-3/160. Hunter officials claimed the software also allows the Unix-based machines to run multiple MS-Dos programs simultaneously in Unix windows. Personal computer programs reportedly can address volumes on a hard disk that exceed the 32M-byte limit of MS-Dos.

Hunter said XDos will ultimately allow any non-MS-Dos computer to run MS-Dos.

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Apple turnover hits at the core of OS/2

CUPERTINO, California — In a stunning turnabout against its top Macintosh software developer, Apple Computer has charged Microsoft with violating its copyrighted user interface in Windows 2.03 and is demanding damages and the "impoundment and destruction" of all allegedly infringing programs.

Analysts said the suit, which is also directed against Hewlett-Packard and its "New Wave" interface, could prove to be a serious blow to Microsoft's Presentation Manager, a critical element of its OS/2 operating system. The Presentation Manager, which will reportedly be based largely on Windows 2.0, is the graphical user interface portion of OS/2.

"Even a court case resolved in Microsoft's favor could hold up the introduction of the Presentation Manager for six months or a year at the very least," said one observer.

Damages

Microsoft had a "limited" visual copyright licensing agreement with Apple for the interface since 1985, an Apple spokeswoman said. With Windows 2.03, "we feel that Microsoft has gone beyond the licence and is infringing on our audiovisual computer display," she said.

Apple seeks damages of $US50,000 per infringement and the "impoundment and destruction of all computer programs known as New Wave and Windows 2.03 or any version, revision or modification thereof or any derivative work based thereon."

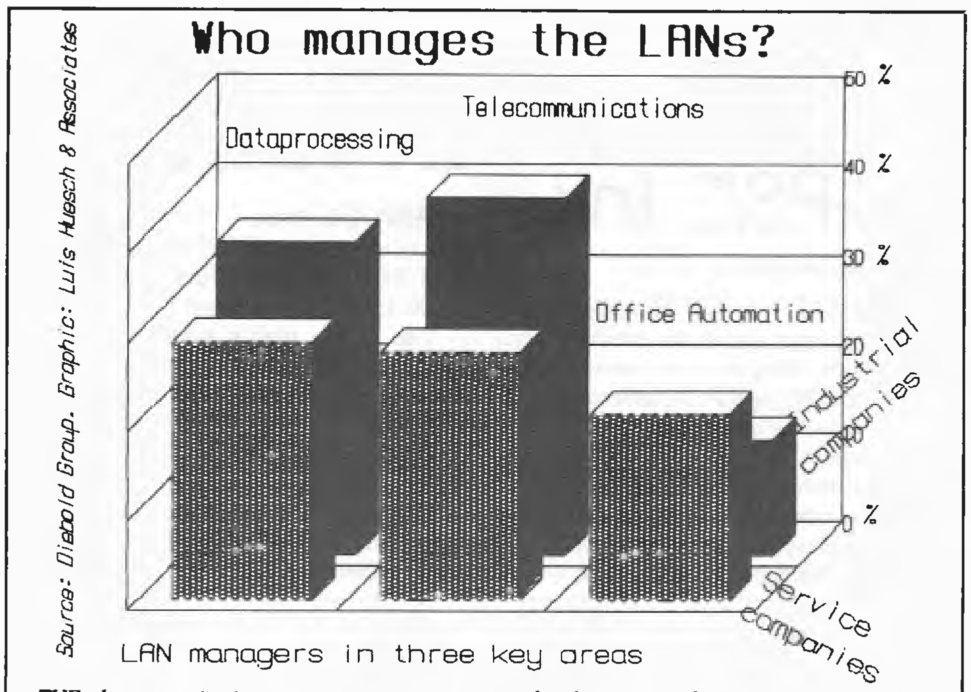
Analysts said that by blocking Microsoft's entry into the ease-of-use arena, Apple could preserve its position as the only company able to offer the friendly interface for the business and education markets, at least temporarily.

According to the suit, HP once sought a licence from Apple for Macintosh's audiovisual works, but Apple declined to grant the licence.

"Nonetheless, Hewlett-Packard has developed a computer program called New Wave that embodies and generates a copy of the Macintosh audiovisual works," the suit reads. New Wave reportedly requires Windows 2.03 to operate.

Sources close to Microsoft chairman Bill Gates said he feels he made a significant contribution to the development of the Macintosh interface through features he incorporated in Microsoft's applications and other software products.

Microsoft and IBM declined to comment on the suit. In addition, an HP spokesman declined to comment on specifics of the suit but said HP does not believe it has infringed and Apple copyrights or patents in the development of New Wave.



Source: Diebold Group. Graphic: Luis Huesch & Associates

THE telecommunications manager comes out on top in local-area network management, according to a survey by The Diebold Group. Telecommunications managers in the US hold the Lan reins in 40 per cent of the industrial companies polled. Runner-up is the DP manager, with OA staff managing a poor third.

Interface links PC, database server, mainframe products

CAMBRIDGE, Mass — An ambitious communications blueprint that ties together Lotus Development Corp's personal computer, database server and mainframe products via a common data access interface is scheduled to be unveiled soon. According to informed sources, the interface will debut with the shipment of Lotus's previously announced 1-2-3 Release 3 early this (northern) summer. However, the product will also be an integral part of Lotus's future line of spreadsheet, database and communications applications, the sources said.

The interface will reportedly allow spreadsheets and databases to query a variety of host and PC applications directly while users remain within the familiar confines of the spreadsheet environment. Sources said Lotus will use these planned communications capabilities as a lure for users considering other applications vendors. Lotus declined to comment on the upcoming announcement.

Lotus has announced a host of still unavailable applications but has given only the sparsest of details on how they will work together. Clearly, the company has some explaining to do.

Many of those questions may be answered by Lotus tool kits that allow Lotus, third-party vendors and MIS shops to write so-called database drivers that take advantage of the common data-access interface. If Lotus garners broad support for the interface, strategic products such as Lotus/DBMS will support the bulk of non-Lotus database management systems.

The announcement will also include a description of The Application Connection (TAC) 5.0 — a new version of TAC offering tighter integration to Lotus spreadsheets through the new data interface. TAC 5.0 will also provide access to hosts other than the IBM 370 and support a broader range of host applications. Lotus, however, will not formally announce TAC 5.0, one source said.

"The missing piece is still the transport piece, the actual communication software and communications management capability," said another source at a major host software firm.

Lan Manager trickle turns into flood

By Sharon Fisher

MENLO PARK, California — The trickle of Lan Manager licensees will increase to a flood soon when a number of new licensees of the year-old OS/2 product are announced. New licensees include Retix, Excelan, and Micom-Interlan, all slated to announce the agreements at Microsoft Corp's Advanced Local-Area Network Developers conference in San Francisco.

Retix and Microsoft will also announce an agreement to give the Lan Manager the capability to support Open Systems Interconnect (OSI) protocols, according to Retix.

Micom-Interlan will announce a series of hardware and software products incorporating TCP/IP, OSI and Ethernet, said product manager George Jones. Products will be available from May, he said. "We'll beat the Lan Manager out the door."

Excelan president Richard Moore would not provide details of his company's licensing agreement, but support for TCP/IP, an Excelan specialty, is likely.

Network General Corp will announce a Lan Manager version of the company's Sniffer network analyser.

Rob Glaser, Microsoft's director of marketing for the network business unit, refused to name licensees but said the Lan Manager has more licensees that MS-Net. Introduced in April 1987 along with OS/2, the Lan Manager, co-developed with 3Com, extends OS/2 to Lan servers. 3Com remained the sole licensee until February, when Hewlett-Packard licensed it to develop a Unix version of the Lan Manager. Last month, Digital Communications Associates (DCA) became the third.

The Lan Manager was dealt a blow in November, when IBM announced it was developing its own OS/2 Lan product, the Lan Server. Although it was based on Microsoft technology, IBM did not license the entire Lan Manager, casting doubt on the compatibility of the two Lan products.

MS to announce three OEM pacts

FRAMINGHAM, Mass — Microsoft is about to announce three OEM pacts designed three major communications standards: Open Systems Interconnect (OSI), Transmission Control Protocol/Internet Protocol (TCP/IP) and IBM's Systems Network Architecture (SNA).

The OEM agreements, along with one between 3Com Corp and Retix, were expected to be detailed in San Francisco at the Microsoft Advanced Network Developers Conference as *Communications World* was going to press.

3Com is expected to announce an OEM pact with Retix that is designed to provide OSI support for the latest release of 3Com's network operating system, the Lan Manager-based 3+Open.

Sources within 3Com said the relationship with Retix will extend to future 3Com/OSI-related products. 3Com intended to make several announcements at the March 30-April 1 conference, a 3Com executive confirmed.

Retix will also provide OSI capabilities for the Lan Manager. Microsoft will unveil a similar, much delayed OEM pact with Excelan, a leading voice in the TCP/IP market. An Excelan official said he expects that Microsoft will use the TCP/IP software as an option to enhance the Lan Manager.

A third pact with Orion Network Systems of Berkeley, California, will link OS/2-based networks to SNA. Orion said its server-based software will put IBM's Advanced Program-to-Program Communications interface on top of the Named Pipes feature of Lan Manager, enabling users to access necessary resources off the network.

A Microsoft spokesman declined to comment on the agreements, but did say: "We believe there are three important protocols in the networking industry: IBM's Netbios network protocol, TCP/IP and OSI."

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Conference has something for all

By Wally Rothwell, executive director, Australian Telecommunications Users Group.

THESE are exciting times for the telecommunications industry, whether you are a user, product supplier, carrier or value-added service provider. All these segments of the industry are witnessing great change right now and nearly all those involved are welcoming it with open arms.

The speed of the wave is too slow for some and too fast for others and, so far as Atug is concerned, we feel that it should proceed quickly but only change its shape in an orderly way, so that it is not a "dumper," a thought which will be addressed by three eminent academics on the first day of the conference.

Most who are involved in the industry will be aware that Senator Gareth Evans' initiative, in setting up a departmental policy review team to examine the agenda for change, will soon come to fruition.

It was at this very conference, Atug '87 last year, that Evans' predecessor, Michael Duffy said that the time for debating as to whether to have a debate about the direction of telecommunications in Australia had passed; it was time to set the agenda and get on with that debate.

To his great credit and to the loud cheers of those involved in this most dynamic of industries, Senator Evans wasted no time in setting up the team headed by Mike Hutchinson, a first assistant secretary in the Department of Transport and Communications. Among others, Atug made a detailed submission to that team, which we understand has been well received, and which we believe has largely formed the agenda for discussion.

Policy preview

It is thus very appropriate that conference delegates will hear from Senator Evans, in his keynote speech, of the progress that the policy review team has made. It seems certain that we will hear that policy determination has returned to its rightful home, having been recaptured by the government and second, that the industry will have an independent regulatory body presiding over the supervision of that policy. These two initiatives, in themselves, will represent a great leap forward and, if achieved quickly enough, should ensure that the wave is not a dumper.

And we feel that the maturity and importance of this conference are now recognised by the presence of the Governor-General, Sir Ninian Stephen, and the fact that it is an endorsed Bicentennial activity. The conference, along with its accompanying exhibition, is by far the major telecommunications event held annually in Australia.

What else is on at the conference?

With the theme orientated towards change, we see that change happening in three major areas — the rules that govern the industry, the technology being spawned and taken up, and the liberalising of the market place. The conference has been divided up into three corresponding days and we are sure that there will be something for everyone whether they be technically inclined or not.

And what the programmers of the conference have tried to do is provide speakers from a variety of backgrounds, both in Australia and overseas, so that not only will delegates be informed of what is new but will also be given an insight into how new opportunities can be grasped.

This is tremendously important to those who continue to view telecommunications as an ongoing but necessary cost — and that cost to some companies comes only second to salaries!

Telecommunications has become the engine for growth and the means to gaining the competitive edge for those organisations which have been able to turn their thinking around, or even to think laterally. Of course telecommunications are crucial to efficient business activity, but they can also be used to reduce costs in many areas and even be turned to profitable enterprise.

So many opportunities are lost because people do not have the knowledge of what can now be done or do not have the vision to use the knowledge.

The conference will, we hope, give both the knowledge gap and the vision a nudge, so that the engine for growth can begin to tick over.

But the Atug conferences are much more than just knowledge providers. They present the opportunity to meet other people in the industry, to see how they use telecommunications and how they may have overcome a problem you might have. There will be around 500 people there and if you have a problem, someone there will have encountered and conquered it.

Next year we shall be at the new Darling Harbor convention centre in Sydney, from April 18-20, and we shall soon be calling for papers. But that is a long way off yet — see you at Atug '88 in Melbourne!

Wally Rothwell

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Waves of change rock Telecom

By Tom Amos

THE telecommunications industry in Australia has undergone little real change over the past 10 or so years, with the carriage part of the industry being totally owned by the government and the market place suppliers swapping deckchairs to share the crumbs that drop from such a monopoly arrangement.

Perturbations such as State government systems, the introduction of satellite services and freeing of the PABX market have had little impact on the total market.

In a time where our New Zealand neighbors are deregulating their telecommunications service provision, Australia stands alone with Germany as one of the last developed western societies to seriously address, then enact, the necessary changes to bring about modernisation of the operation of the nation's information network.

The front of the telecommunications wave of change is now upon us, with major investments being corporately made in the knowledge working areas, the areas where an impact of telecommunications is being felt today. As the network webs spread, wider bandwidths and more diverse services are required, and these will have an impact on the future.

Countless commissions and investigations have occurred in the past 10 years in the telecommunications arena in Australia with Telecom heeding the words from some and ignoring others and the Government failing to really act on any. Australians believe, in a rather mystical way, that any solution to the telecommunications dilemma will not be found in importing a tailored solution from a foreign country.

We are unique and so should be the solution, if indeed we find one. History sadly bears out our tenacity to "go it alone", particularly in the related area of broadcasting and radio, which are the only real local guides.

Such bodies as Atug and to a lesser extent the AIIA have been voices in the wilderness of Government bureaucracy pushing up the results of the winds of change which have been blowing overseas for some time. After all, it is in Australia's interest to have the best, most efficient telecommunications systems to provide timely communications at the lowest price: the cutting edge of competition in a global marketplace.

The power and control of telecommunication service provision is moving away from the traditional government-owned service providers and towards the user. New technology is allowing more user control and decisions on information flow which in turn are part of a business strategy and the marketplace success. With the responsibility come the investment costs to facilitate better communications, all now owned by the user.

Tom Amos . . . 'reactive solutions'

The role of the carrier is diminished along with the investment per user service and will continue to diminish as long as the user can derive some benefit from the continued investment. Telecommunications is a vital lifeline of future industry and the capture of efficient service provision along with the ability to control a good proportion of the communications hardware is essential if both business and government are to flourish.

Since vesting in 1975, Telecom has moved down the track of engineering consolidation, providing reactive solutions to a perception of the marketplace. Only in recent times has Telecom gravitated towards a marketplace-driven set of services, establishing account management and some liberalisation of selected terminal equipment areas: the start of the wave of change. To gain a user perspective, it is amazing that the supply to private phone instruments which are approved to connect to the basic network is only a relatively new phenomenon in Australia.

What has also been changing is that the recipients of the cross-subsidy, the social obligation Telecom uses as the shield for discharge of its obligations, are not as grateful as one would expect. The size and extent of the marginal cross-subsidy has always been a lively point of discussion in any debate on Telecoms' role and it is almost impossible to either believe or deny the size of this claimed subsidy as the good information is just not available. The recent rural enquiry, Poles Apart, estimated the size at more than $A500 million in 1986.

If any future benefit is to be thus gained for the user at the same time as change is considered, some liberalisation must also be introduced. Otherwise all that will be achieved is to transfer the problems of one area to another which could be even more draconian than the first. It must be remembered that all Telecom is doing is discharging its obligations as it sees them under the Telecommunications Act, 1975. Of course, now is the time if you disapprove of Telecom's current role to voice that disapproval either through Atug, the Dotac or directly to the Minister in Canberra.

For change to be effective for the user, timely cost-related access to new and emerging technology with no artificial impediments is necessary. The embodiment of service sunset arrangements and the continued myths of competition as portrayed by general satellite solutions do not address the commercial realities faced by users. Change needs commitment and policy continuity.

The need for an independent regulator to administer the national infrastructure is a part of the coming changes. The structure of that change and the powers that are available will directly impact the scope users will have to construct and operate networks tailored to suit their particular application.

The bogies of transborder data flow and the conspiracy of merciless multinationals pale when you consider that the technology to implement such exploitation scenarios has been available and used for many years. All three electronic-based current government telecommunications monopolies are planning or are implementing such systems on both our neighbors and trading partners.

To ride the wave of change at home we need a thriving local business environment which provides timely, cost-related services to best serve the needs of the nation. Gone in the 1990s must be the concepts from the 1900s Post Office of universal suffrage to enshrine the monopoly, replaced by the horrid user pays principle. Times and requirements have moved on as the wave of technology and specialised vertical applications dictate the most cost-efficient solution to each problem. The edge is timely information in a global trading system.

In 1988, the issue of carriage and content regulation continues to dominate. Telecom is reluctant to let go of the services concept which embodies the old idea of a voice monopoly and separate data services. Rather later than expected, the proposed Telecom introduction of the ISDN has polarised its view that the content is very important in ISDN information provision as a single wire provides three services, each tariffed separately. The user integration of voice and data on to a single pipe for use in private networks is thus contrary to the Telecom view of the world. Telecom intends to offer a blurred distinction between regulation and the content carried on a pipe.

> *'Whether the wave is a dumper and no benefit will flow to the users . . . will be judged only in time'*

The user investment in plant will continue unabated into the 1990s with direct Customer Premises Equipment (CPE) purchases becoming a major item in corporate plans. Current artificial market regulations designed to spread the current portions of the CPE monopoly over a few suppliers are not sustainable in a changing environment. Telecom, a controller of the market place by regulation will, if the status quo is to remain, need to enter the marketplace as a CPE supplier/manufacturer and control the market by domination rather than regulation. The result, an overheated CPE area is sure to be source of disappointment for the majority of entrants to this new area. A possible dumper for the emerging industry.

To change and liberalise a marketplace where the incumbent operator has almost 100 per cent of the business is not a trivial task. The US approached the task from a business viewpoint, protecting new entrants by a complicated legal and semi-regulated framework which has a lot of the French justice system inherent in its operation. They have been at it for more than 20 years and a number of strong competitiors may eventually emerge, out of the once 300 odd service suppliers in the marketplace.

In the UK the government benevolently led the charge and has initially created a duopoly with resale of capacity permitted,

(Continued page 19)

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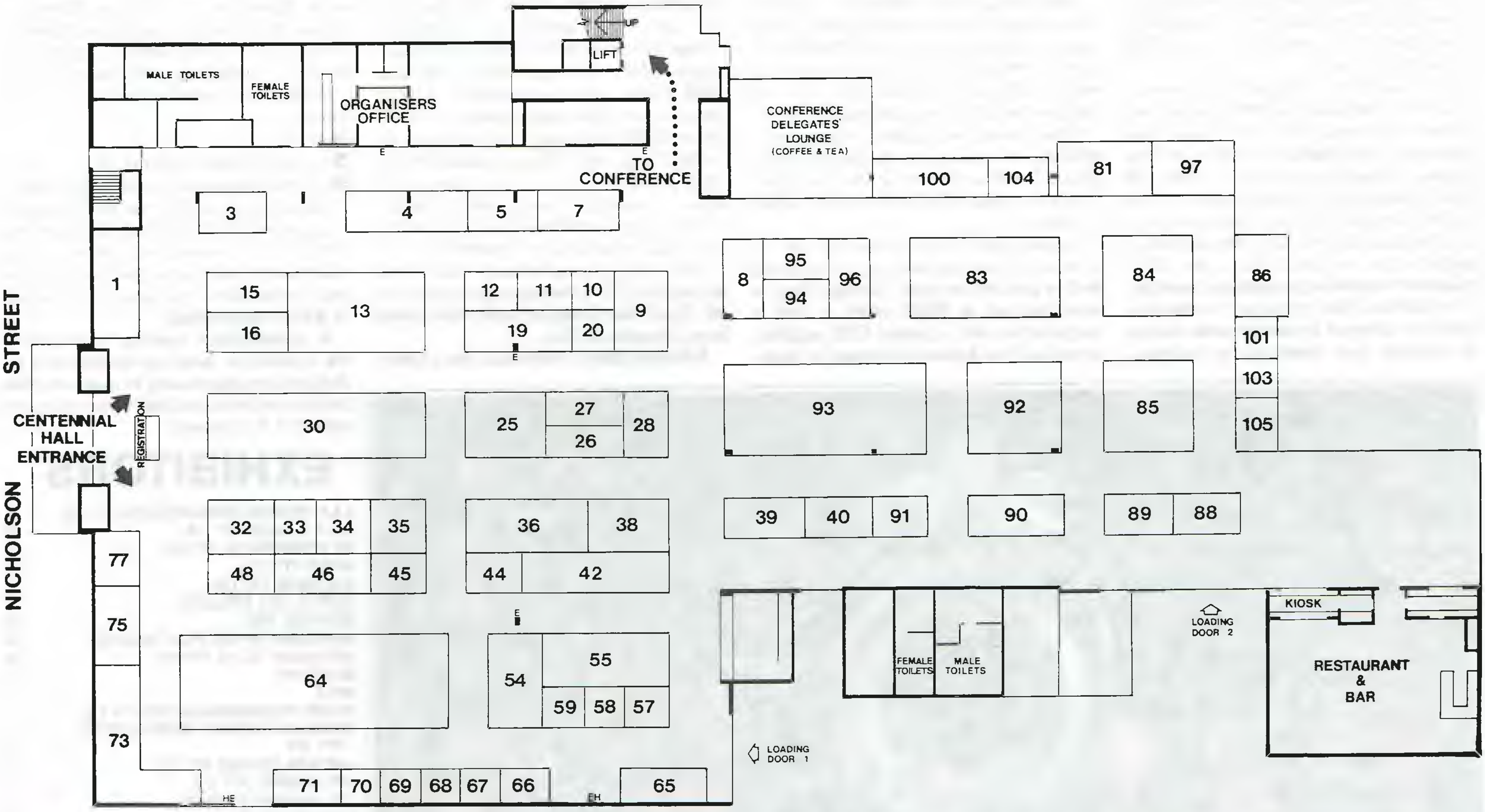
Floor plan of exhibitors



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Evans may foreshadow Cabinet move

MELBOURNE — The Governor General, Sir Ninian Stephen, will open the fifth Australian National Telecommunications Conference and Exhibition, held at the Royal Exhibition Building in Melbourne from April 19-21 under the motto "The Wave of Change".

The Minister for Transport and Communications, Senator Gareth Evans, will deliver the keynote address to what Atug chairman Tony Staley describes as "the premier telecommunications event of 1988". Staley said exhibition space let has tripled from the Sydney venue last year, and the show alone would offer unrivalled opportunities to learn about the latest telecommunications products and services.

In addition, the concurrent conference has been planned to suit the wide variety of interests that make up the industry, catering for people from non-technical managers to those who understand "the more rarefied engineering concepts".

Addressing the conference, Senator Evans is expected to enlarge upon his discussion papers to Caucus on the government's options for the future of Telecom, Aussat, OTC and Australia Post — or even foreshadow a Cabinet decision.

Other conference speakers include such industry observers as Professor Henry Ergas, Dr Robert Albon and Ian Reinicke, who will debate whether the wave will be a dumper.

Opportunities under a new framework of rules will be discussed by an emissary from a potential entrant, George Petty, a vice-president of AT&T which is both a mega-carrier and a potent CPE supplier, as well as New Zealand's Minister for State-owned enterprises, Robert Prebble.

The promised "new world of ISDN" will be highlighted by Telecom ISDN marketing manager Norman Gale, STC Technology Ltd (UK) director of information system Robert Swindle and David Major, director of the NSW branch of consultants DMR Datec. (At the exhibition, Fujitsu plans a spectacular display using its Imagephone ISDN terminals, further refined after field trials with US customers. On the other hand Siemens, which planned to show a working demonstration of its Hicom system, withdrew from the exhibition because of internal "glitches".)

The "changing marketplace" will be examined by QPSX chief executive John Farrell, Tytel's Ian Campbell and Mike Jones from consultants Nus.

Following these overviews, the conference is streamed out into two series of sessions, Stream A and Stream B, with topics ranging from Regulation Structures, Network Management and The Market in Stream A to Rules for the Future, Network Technology, Cryptographic Security and People and Marketing in Stream B.

Workshops will be held on three subjects:

- ISDN;
- Small business systems, and
- Communications strategy planning.

Registration fees for the full three-day program are $A375 for Atug members and $A475 for non-members. Senior executives wishing to attend the opening day overview sessions only pay $A130 (Atug) or $A160 (non-Atug).

A "shareholders' meeting" at the end of the conference gives companies and individuals an opportunity to question Atug directors or broadcast their views about any aspect of the industry.

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Largest display of equipment

THE largest display of communications equipment ever assembled in Australia will be seen at Atug '88, the Fifth Australian Telecommunications Exhibition and Conference, held at the Royal Exhibition Building, Melbourne, April 19 to 21.

The Australian Telecommunications Users Group (Atug), together with Riddell Exhibition Promotions, is staging the exhibition with its annual conference under the theme "The Wave of Change".

More than 70 exhibitors will display the complete spectrum of communications equipment including cellular mobile telephones, data communications, encryption equipment, facsimile, office automation, optical fibre products, PABXs, satellite communications, switching equipment, telecommunications test equipment, telemarketing products, telephone handsets, two-way radios, video conferencing, voice message systems and much more.

Visitors to the exhibition will also learn about the latest developments in ISDN, networking and network management.

Typical of the displays is the new Tytel 800 Series Lanx telephone system, a totally modular networked telephone system which can grow up to 80 extensions.

Catsco company will display its computer-based integrated systems for the effective management of major business assets, together with innovative equipment from its Telmax, Catcom and Voice Messaging Systems.

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Atug'88

Philips Telecommunications and Data Systems will launch its Sopho-S family of digital PABXs, catering for applications from 50 to 20,000 extensions. Sopho-S already operates in more than 30 countries, and Philips has signed licensing agreements for the manufacture of the system in China.

Australian Optical Research will display optical fibre couplers which open new application areas for passive optical-fibre data networks, and Air International will demonstrate its new cellular mobile telephones.

Other major exhibitors include Hewlett-Packard, J N Almgren, Fujitsu, Mitsubishi, NEC, Plessey, AAP-Reuters, Telecom and many others.

Entry to the Atug '88 exhibition is free, but people intending to attend the Atug conference must register and pay fees.

Waves of change rock Telecom

(Continued from page 16)

with over 200 additional secondary suppliers being licensed to provide service on behalf of others. Additional basic service carriers are now being licensed on an area by area basis

Australia has just four service providers, one dominant in the domestic scene and the others in no less important but lesser roles.

At the crest of the wave the questions of cross subsidisation, private use and business demands need to be addressed. It appears logical and sufficient that Telecom and corresponding staff be split into a number of discrete and distinct accountable elements, each with a defined business, charter, goal and accountability.

It is interesting to postulate the potential effects of change on the function and operation of the largest service provider, Telecom. Each of the functions already created by Telecom to discharge its duty could effectively be the basis of progression to a leaner, application-driven corporate Telecoms. Competition, gradually introduced, could be freely possible with each of the daughters of Telecom so created. The marketplace may then determine the most successful mix of services, public and private.

The benefits of a new Australian environment for telecommunications could be a rapid (five years) introduction of cost related pricing in each of the various businesses and choice of service provider. Some Telecom daughters could be floated as the government desired and others, such as in the rural area, may be net beneficiaries of the direct subsidisation. New technology would be genuinely encouraged for competition in this area to bring rural costs down.

The above structure would create a Telecom which is more decentralised and closer to its customers needs and requirements.

The wave of telecommunications change is now upon Australia, and as it passes it is imperative that Australian users can ride the rise and fall of the supply of services and the capital investments required to make a commitment to better future telecommunications services. Whether the wave is a dumper and no benefit will flow to the users, and thus Australia, will be only judged in time.

- *Tom Amos is a board member of Atug and a partner in the Sydney telecommunications consultancy Amos Aked Swift.*

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Telecom NZ grasps the nettle

By Stephen Bell

WHILE Australian communications users and managers wait for the word from Senator Evans — possibly at the Atug conference but more likely in connection with the May economic statement — Telecom New Zealand has spelled out already how it is preparing for competition. In an interview with the new managing director, our NZ colleague Stephen Bell was able to glean that Telecom NZ intends splitting up the carrier into seven to ten independent business units, including separate long-distance and international operators. "A bitter-sweet pill" will come with the release of the carrier's new tariff policies in two months' time . . .

THE trunk and international side of Telecom New Zealand looks like being split off into an autonomous business unit to allow the company to concentrate more effectively on its strongest likely private contenders.

Dr Peter Troughton, new managing director of Telecom Corp of NZ, says it is essential for it to be structured as a commercial business, not like a single pyramid bureaucracy.

"So I'm going to be looking at creating a number of businesses — between seven and 10 — where there are managing directors running them and those managing directors are accountable," he said.

"One is obvious," he said. "We will get competitors providing trunk (toll) and international services; so we've got to provid an organisation that will look pretty similar to the competitive organisation, so the customer has a clear choice between what we offer and what the competitive organisation offers. We are going to have to provide a trunk and international business. And that means a lot of carving out from what we've got now."

Electronic mail may be another candidate for a separate business set-up, Troughton said.

Would a keenly-priced toll and international service not raise the prices for local and provincial services, whether voice or data? "We've got to redress the cost," Troughton replied; "We've got to make each business provide a reasonable return.

"But that does not necessarily mean enormous rate hikes in the local operation," he insisted, "because modern technology and managing the thing as a business in its own right helps you to control your costs. One would not expect to see any massive increase in costs."

The essential weapon in combatting competition and preventing rivals "skimming the cream" of trunk and international traffic is appropriate setting of tariffs, Troughton said. "What I am proposing is that we publish a statement of our tariffs and our policies in about two months' time. That is going to tackle the issue of usage-sensitive pricing and how we're likely to restructure our trunk tariffs.

"That's going to be a bitter-sweet pill," he

(Continued page 22)

'Better than Britain' boast

DEREGULATION will be different and more successful in New Zealand than it was in the UK, new Telecom NZ managing director Peter Troughton suggests.

Troughton managed London exchanges for British Telecom during deregulation there and became disillusioned with its results. "BT was created as a regulated monopoly. That is not going to be the case here," he pointed out. "It was a complete private monopoly in my view — and I think you must stress that as my view.

"There was one competitor, which started from scratch and in my view was very unaggressive. We have ended up with a pricing formula for BT which is retail price index minus three per cent. BT local call charges are very considerably more than any other country in the world," he added. "On that basis they have a recipe for printing money.

"If you are in that position, you have no reason for making yourself efficient or cutting your overhead," he said. "In BT's case, in my view, they really turned their nose up at the customer. They said 'we're private now, we are not accountable; we have got competition.' They took no notice of customer service aspects and got a fairly obvious deterioration in performance resulting from that."

The New Zealand approach of open slather for competitors "frankly, I think is better," Troughton said. "BT fought a rearguard action of trying to protect itself within the regulatory frameworks rather than getting on and sorting the business out. The top priority here will be to get this company functioning as an efficient company that can stand on its own two feet in a competitive environment."

State-owned Enterprises minister Richard Prebble expressed disappointment with Telecom's most recent six month financial performance, recording a 6.5 per cent return on investment.

"We've got to operate with a normal commercial return," Troughton said. "It's difficult to talk about return when we do not even have a balance sheet at this stage because of delay over valuing the corporation's assets.

"We do not really know where we are in terms of what our assets are and what is a reasonable return."

But a normal commercial return is one that enables the company to repay its debt and have an appropriate profit on top of that.

Subject to several caveats and the repeated insistence that he has been in the country only two days, he finally suggested 10 to 20 per cent might be a more appropriate figure.

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ATUG'88 SHOW CASE

AAP REUTERS
COMMUNICATIONS
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A.A.P. REUTERS COMMUNICATIONS PTY LTD *STAND 54*

ATUG '88 is the vehicle for the launch of the Cycomm 1000 voice privacy system that will be marketed exclusively in Australia by AAP Reuters Communications for Cycomm Corporation of Oregon USA. The Cycomm 1000 reportedly makes it virtually impossible for outsiders to listen in to telephone and radio conversations. It employs a unique scrambling and encryption method that has gained US military rating: The voice signal is scrambled mathematically and digitally, not physically, so no part of the signal is degraded. Cycomm 1000 also caters for user groups. Within a network, you may have up to five different groups that share a code and talk securely. In addition, it stores as many as 80 private two-party codes. The company also features the Skyswitch end-to-end satellite communications system and the Hughes network services ISBN system, a Vsat system that already has 55 earth stations installed throughout Australia, as well as the Aspen voice messaging system with new facilities and features.

A.A.P. Reuters Communications Pty Ltd, P.O. Box 322, Port Melbourne, Vic, 3207. Tel: (03) 644 9203

A.C. & E. SALES PTY LTD *STAND 65*

A.C. & E. Sales Pty Ltd (formerly known as Amalgamated Communications & Engineering) is an Australian owned local manufacturer of quality connectors, adapters, patchpanels and cable assemblies for the telecommunications, broadcasting and computer industries and also an importer and distributor for a number of world leading connector manufacturers. Since 1967, A.C.&E has been supplying specialised components to the broadcasting and telecommunications industries and products on display will include a range of items from Australia and overseas. Leading overseas manufacturers represented include: Telegaertner, West Germany; Franz Binder, West Germany; Rendar, UK; Vitelec, UK; Sumilomo, Japan; Dual, Taiwan; and other OEM suppliers.

A.C. & E. Sales Pty Ltd, 9 Hill Street, Leichardt, NSW, 2040. Tel: (02) 660-5077

AIR INTERNATIONAL PTY LTD *STAND 40*

AIR International's stand will feature the Novatel range of cellular mobile telephones and accessories, which it manufactures and distributes throughout Australia. The company also supplies sophisticated electronic car alarm systems, cruise controls, domestic and professional security products. Manufacture of the Canadian-designed Novatel range of cellular mobile telephones began during 1987, and includes a range of in-vehicle models, a unique dash mounted unit, transportables, briefcases, and a soon to be released handheld cellular phone. The concept of a mobile office on wheels will be highlighted, with a demonstration of facsimile and PC interface capabilities through Novatel cellular products. Novatel ... for the right connection.

Air International Pty Ltd, 437 Williamstown Road, Port Melbourne, Vic, 3207. Tel:(03) 645 1666

AUSSAT PTY LTD *Stand 38*

AUSSAT Pty Ltd was established as a commercial company in 1981 by the Federal Government. Its charter is to own and operate the Australian National Satellite System. Since then the company has developed and brought into operation its three first generation satellites. Additionally, Aussat has comprehensive satellite

Telecom NZ grasps the nettle

(Continued from page 20)

promised. "It will make the trunk calls cheaper, or certain of them quite a lot cheaper."

Businesses with two or more lines are likely to be charged for local calls on a time basis, with a lower rental in partial compensation, "but we will have to offer local private circuits as well," Troughton said. "I would not change them without giving them the private-circuit service," he insisted.

On the data communications side specifically, he sees a need to update services, though he admits he has not had time to examine the problem in detail. "There's a hell of a lot of analogue still around," he said, "and a lot of the complaint has been about lining up for analogue circuits.

"Frankly that comes back to an investment problem. We should not have been talking about analogue private circuits. We should have been talking about some decent digital private circuits.

"Clearly, one has got to move forward to the point where you have got a much more liberal offering of digital private circuits at a reasonable price. You just start moving away from this analogue technology."

A lot of capital spending will be necessary to bring Telecom technology up to date, both in its publicly offered services and in its internal DP and communications, Troughton acknowledged. Basically, he charges, there has been "gross under-investment" on technology.

"Let's take Auckland. A lot of the switching equipment that serves the business district was old-fashioned electromechanical equipment, rather than modern electronic equipment."

This, he suggests, was misguided for a city rapidly taking a leading role in the financial world. And on the billing and accounting side, "as far as I can see Telecom is using systems that were in vogue about 1945". Totally mechanical systems that have no computer control, and attempting to meet the requirements of modern business. All of these systems should have been thrown out 10 or 15 years ago, reasonable computer systems put in and probably changed once already."

Telecom has a program for improving customer billing and accounting services, most of which is expected to come on stream by August. "By the end of this year, we should be operating as efficiently as any company," said Troughton. "We've got to retrain about 10,000 to operate proper systems."

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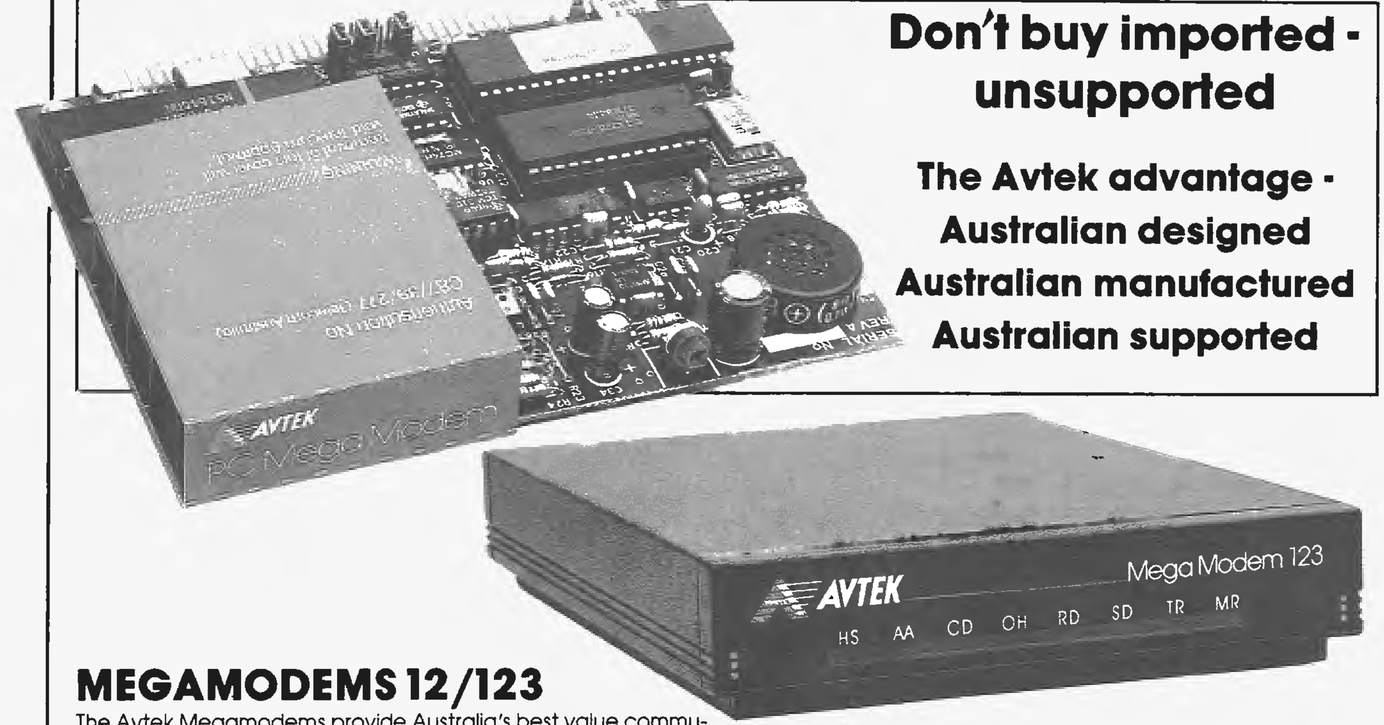

MEGAMODEMS 12/123

The Avtek Megamodems provide Australia's best value communications products, with a range of fully automatic, autodialling modems. Megamodems are suitable for data transfer from personal computers, terminals, mainframes and mini host computers and for all videotex services such as Viatel. The use of the latest technology has enabled us to make the Megamodem more compact and reliable than any other modem. Price is very competitive and reflects efficiencies incorporated in the design. The Megamodems are locally designed and built. Service, support and specialist R&D for the Megamodem range is all based in Australia. Available either as a standalone RS232 model or as a plug in 1/2 card for IBM PCs and compatibles. The Megamodem range of modems are Telecom authorised.

Automatic Dial, Answer, and Disconnect: The Megamodems will automatically answer an incoming call and connect the computer to the line. When originating a call it will then dial out the required number and auto-connect to the computer at the other end. It will then "hang-up" at the end of a communications session. Both pulse and tone dialling are supported. The modem is compatible with new Telecom exchanges and modern PABXs and can handle high speed tone dialling.

Fully Hayes AT Smartmodem Compatible: The Megamodems are industry standard "HAYES SMARTMODEM" compatible which means they can take advantage of all the communications facilities of packages such as Crosstalk, Open Access, Symphony and Multicom. All communications parameters such as baud rate, parity and number of stop bits are set up automatically by the software and the Megamodem. Using appropriate software data can be sent and received while the Megamodem is unattended.

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control facilities in Sydney and Perth and an extensive network of major satellite communications earth stations in each capital city, including Canberra and Darwin. Currently the company is undertaking the design, development and specification of its second generation satellite system due for launch in mid 1991. At the moment, a number of projects relating to satellite communications for voice, data and related services are being developed including Starnet, City Link and remote area services.

Aussat Pty Ltd, 54 Carrington Street, Sydney NSW. 2001 Tel:(02) 238 7800

AUSTRACOM PTY LTD *STAND 89*

AUSTRACOM - PABX division specialises in the supply and re-installation management of pre-owned leading brand PABX Systems throughout Australia. The savings are significant — generally 25 to 40 per cent. The company's major strength is its ability to offer reliable multi featured PABX systems and all systems are provided with comprehensive guarantees after being re-configured and re-programmed to the clients' specification. Austracom recognises the potential risks and costly repercussions of choosing the wrong system and employs highly qualified technical staff who become involved with the customer from day one of the initial enquiry. Austracom - Commander division specialises on a national basis in the supply of fully guaranteed pre-owned Telecom Commander systems. All systems supplied are re-configured to clients' exact specifications and despatched from the company's technical refurbishment and testing centre in perfect operational condition.

Austracom Pty Ltd, Unit 7,43 Herbert Street, Artarmon, NSW, 2067. Tel: (02) 436 4333. National enquiry hotline: (008) 02 3413

AUSTRAL DATA NETWORKS *STAND 4*

THE company is a division of Metal Manufacturers Ltd, established to become active in the field of Lans and fibre optic data communications.

The first product offerings come from BICC Data Networks Limited UK with whom a distributorship arrangement has been made covering Australia and New Zealand. The BICC product range, known as Isolan, covers the widest range of IEEE 802.3 Ethernet equipment available from any single source and includes all media. The range covers base line copper and fibre optic, PC interface cards and communications software, host interface and test and monitor equipment. ADN supplies the range of product necessary to supply dealers on demand, provides education in the use of the systems and configuration, supports product and systems, and provides the marketing and promotional thrust to the market. The division is actively seeking PC dealerships.

Austral Data Networks, 5 Bridge Street, Pymble, NSW 2073. Tel: (02) 488 8799

AUSTRALIA POST *STAND 100*

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(Continued page 24)

X.400 gets support from Sun

By Mary Petrosky

MOUNTAIN VIEW, California — Sun Microsystems has joined the swelling ranks of vendors supporting the CCITT X.400 message handling system with the introduction of software that serves as a gateway between Sun's electronic mail systems and X.400-based mail systems from other vendors.

More than two-dozen computer vendors and public e-mail service providers — including AT&T, Data General, DEC, Fujitsu, Hewlett-Packard, Honeywell Bull, IBM, ICL, Nixdorf, Unisys, Wang and Western Union — have already demonstrated X.400 products. Sun was to show off its Sunlink Message Handling System (MHS) at the Hanover Fair last month, as well as at the Enterprise Networking Event '88 International in Baltimore in June.

The Sunlink MHS gateway takes messages created by Sun's mail systems and converts them to the message format and addressing scheme used by X.400.

Hardware platform

Users on a local network of Sun workstations can continue to use Sun's existing e-mail systems, which are based on US Defence Department and Unix protocols. Any of Sun's Sun-2 or Sun-3 workstations can be used as the hardware platform for the gateway.

Because Sunlink MHS acts as both a gateway and a message router, it can relay messages from a local network to a wide-area network. In addition, Sun provides directory services that make it easier for the network administrator to create addressing and routing tables. The Sunlink MHS software performs the actual conversion of this addressing and routing information, so Sun mail users do not have to change the way they currently address messages.

Sunlink MHS is layered on top of Sunlink OSI, which is softwre that implements the full seven layers of protocols defined by the Open Systems Interconnection model. Sunlink OSI was first released in 1986 and currently conforms to Manufacturing Automation Protocol (Map) 2.1 and Technical and Office Protocol (Top) 1.0.

For wide-area network applications, Sunlink MHS is layered on top of Sunlink OSI and Sunlink X.25, allowing access to packet-switched data networks. It will be available in May for $US6000.

- *Mary Petrosky writes for* Network World, *our US sister publication.*

C&C Computers and Communications

How Nefax 25 can cut your networking costs in half.

Time saved is money saved. And with the new Nefax 25 Series extra-high-speed facsimile transceivers, you save a lot of time and a great deal of money.

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There are nine one-touch keys you can programme with a variety of specific tasks. For example, send documents with just one touch of one key, to the same place, at the same time, using the same copy quality and mode, over and over.

You can pre-register as many as 200 frequently called numbers. And transmit up to 36 of these at the push of a single key.

Documents can even be enlarged as they are transmitted. Time saved. Money saved.

With the optional memory facility, the Nefax 25 can also store documents, and then broadcast them to up to 200 other pre-registered machines in your network, one after the other, by just one touch of one key. Time saved.

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And you can save even more time and money by establishing a Nefax network for relay broadcasting. In this manner, if you need to send information to branch offices all over the United States, for example, you only have to transmit once from Australia. This transmission would be picked up in New York, say, and relayed from there at local rates to all the other offices. The cost and time savings are obvious.

For more information on how the Nefax 25 Series can cut your networking costs in half, call us. Melb. (03) 267 6355. Sydney (02) 436 8111. Bris. (07) 252 8800. Adel. (08) 373 2022. Perth (09) 325 2155. Canb. (062) 51 4611. Or (008) 033 352.

NEC FACSIMILE

LINTAS MELB NCM 1035

(Continued from page 23)

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AUSTRALIAN OPTICAL FIBRE RESEARCH PTY. LIMITED.

AUSTRALIAN OPTICAL FIBRE RESEARCH ***STAND 48***

AUSTRALIAN Optical Fibre Research Pty Ltd, a wholly owned subsidiary of Wormald International, was established in 1984, funded by the Australian Government through a contract with the Department of Industry, Technology and Commerce, to develop and explore opportunities in optical fibre device and sensor technology. The company has established a first class team of specialists of international standing, carrying out fundamental and applied research into optical and opto-electronic components and systems. Major research contracts, in addition to those on behalf of DITAC, are being carried out for OTC, the Department of Defence, Wormald International, National Energy Research Development and Design Council, STC and Telecom. Optical fibre couplers split light in a controlled way from a single fibre to two or more fibres. As basic components, couplers open new application areas for passive optical fibre data networks. AOFR has developed a range of high quality fibre optic couplers including single mode, multi-mode and asymmetric types. AOFR's manufacturing and quality control techniques have ensured that the couplers produced conform with the very highest standards worldwide.

Australian Optical Fibre Research, 9 Lyell Street, Fyshwick, NSW. 2609. Tel: (02) 80 5911.

AUSTRALIAN TEL-TEC PTY LTD

AUSTRALIAN TEL-TEC PTY LTD ***STAND 46***

Australian Tel-Tec Pty Ltd, is the Australian agent for ADC Telecommunications Inc. A new and special product range on display will be the ADC QDF Insulation Displacement Block. ADC's unique split cylinder concept does away with time consuming jobs of wire-stripping, wrapping and soldering. The technician simply punches the wire down into the split cylinder which cuts and strips the wire to make connection. The QDF range features individual protector modules for cost efficient protection and allows individual break access for testing and monitoring. Other equipment on display includes the ADC fibre distribution and storage panels, RS232 networking products and communication connectors.

Australian Tel-Tec Pty Ltd, 4th Floor, 98 Albert Road, South Melbourne, Vic, 3205. Tel: (03) 699 8898

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Finance firms seek standards for industry

NEW YORK — A group of US financial services companies have formed an organisation to define DP and communications standards for their industry, using the seven layers of the Open Systems Interconnect (OSI) model as a starting point to describe industrywide requirements.

Called Fiso, Inc, the group hopes to bring some consistency by year-end to the way financial services companies process data and communicate, not only within their own businesses but also in their dealings with external information suppliers. "The only standard in the business now is that everyone does everything differently," said David Isherwood, a co-founder and assistant vice-president at Shearson Lehman Hutton.

Fiso will first define the unique requirements of the financial services marketplace in terms of the OSI model and then scrutinise the work of other cross-industry standards bodies, he said.

Although it is open to adopting suitable pre-existing standards , the group expects to adopt many of its own standards. "In the financial industry, there are some nuances," Isherwood said. "We have a lot of broadcast-type data, and I'm not aware of anyone doing work on broadcast standards."

So far, Fiso consists of 17 member companies, but 130 organisations have expressed interest in joining the group. Members and interested parties also include vendors such as AT&T, DEC, IBM, Stratus Computer and Sun Microsystems; information services suppliers, including Quotron Systems, and Automatic Data Processing; the stock exchanges; the Securities Exchange Commission and the Commodities Futures Trading Commission.

$US25 million deal

STOCKHOLM — L M Ericsson has been awarded a $US25 million equipment contract from Finland's telecommunications administration. The five-year agreement, call for the supply of digital AXE switches for the Finnish public telecommunication network. Ericsson has previously supplied more than 75 per cent of Finland's long-distance network. Ericsson also signed two other contracts with the Finnish PTT, one to supply mobile telephone switches to expand the Nordic mobile telephone 450 network and the other to cover Finnish sales of Ericsson mobile telephones.

correctly identified a major niche in the communications market for a truly professional sales, installation and service organisation. The recent move into larger, more centrally located premises, is indicative of the company's on going success and progress. Product range includes mobile two way radios, base station share sites, two way radio hire, telephone and radio access systems, cellular mobile phones and pocket pagers. A cornerstone to Autophone's success has been a concerted effort to provide excellent technical support and back up for the entire product range. To guarantee that the highest service standards are met, investment has been made in an extensive range of high tech test and maintenance equipment to ensure optimum reliability and performance.
Autophone, 7 Millicent Street, Burwood, Vic, 3125. Tel: (03) 288 2000

AVTEK *STAND 58*

AVTEK, now in its fifth year of operation as a local modem maker, has released a range of smart modem products. Designed and built in Australia, the Megamodems are compact, fully Hayes compatible and available in either V21/V22 or V21/V22/V23 configurations. An internal in-modem is also available as a half card unit which is suitable for IBM PC and compatible. Megamodems are upward compatible and come with a 12-month extended warranty and access to Avtek's technical support line. Avtek also has its Minimodem which is probably Australia's lowest priced Viatel compatible Telecom approved modem. Special discounts are available at the show.
Avtek, P.O. Box 651, Lane Cove, NSW 2066. Tel: (02) 427 2177

Atug'88

BRITISH TELECOMMUNICATIONS PTY LTD *STAND 1*

BT operates in Australia selling advanced products through its subsidiary, Teletrade Services. The BT range sold in Australia includes the City Business System and its extension, the Integrated Trading System. Other specialised products available from BT include the Lektor security facsimile, the Imtran system for transmitting X-ray pictures over ordinary telephone lines for remote diagnosis, and a similar system for security alarms which integrates CCTV and movement detectors.
British Telecommunications Pty Ltd, 4th Floor, 33 York Street, Sydney, NSW,2000. Tel: (02) 262 1199

BROADBAND NETWORK COMMUNICATIONS PTY LTD *STAND 19*

THE company designs, installs, certifies and integrates local area networks. As agent for Lanex broadband networking products, it will be demonstrating the full range of Lanex products including network bus interface units, MAC level bridges between broadband, baseband and fibre, PC interfaces, broadband transceivers TCP/IP and network managers.

On show also is a low cost terminal to host Lan-TCP/IP over broadband and network management of the terminal to host Lan. These systems will be running over a Mod-Lan broadband network that is also simultaneously running video. Broadband Network Communications has designed and built systems for government, hospitals, offices and commercial use in Australia and South East Asia.
Broadband Network Communications Pty Ltd, Suite 404, 4th floor, 781 Pacific Highway, Chatswood, NSW, 2067. Tel: (02) 411 6535

CABLECON SERVICES PTY LTD *STAND 20*

CABLECON Services Pty Ltd offers the UK made range of Chesilvale Electronics Ltd communications test instruments, including the dual-standard test set types DSTS2. Also on show is Chesilvale's field engineers test set type DSTS4, which has the same features plus the added benefit of built in local battery working and ring generation. Cablecon Services also has the Chesilvale switching and line simulator (TSLS) on display. This unit simulates two telephone lines with 1km and 6km lengths which may be switched together. The TSLS simulates dial, busy, ring & N.U. tones and also ring current and meter pluses (2 types). The inexpensive

(Continued page 27)

Nixdorf targets small business

HANOVER, West Germany — Targeting small and medium-size businesses, Nixdorf AG has launched a family of workstations that include data communications features. The announcement came on the opening day of CeBIT '88, the annual computer trade fair here.

The new Quattro com/bi range integrates Nixdorf's 8870 Quattro workstation, a 32-bit multiprocessor machine, with the System 8818 digital PABX, of which Nixdorf has sold more than 5000 in 15 countries apart from West Germany. According to the vendor, the new line will let users simultaneously transmit voice, data, text and graphics over a single in-house network.

"We want the Quattro com/bi to allow small businesses to make the transition to integrated communications services," said Heinz-Dieter Wendorff, member of Nixdorf's board of directors.

Three new models were introduced. The entry-level Model 30 can be used with two processors and supports up to 18 users, the company said. The top-of-the-line Model 75 can run up to four parallel processors and supports up to 30 users and 15 printers. The machines can be connected to each other in a network using twisted-pair wiring or directly to a departmental host. It can also connect telecommunications services such as videotex, facsimile and teletext.

Philips and China in fibre projects

EINDHOVEN — NV Philips of Holland is to set up a joint venture with China to produce optical fibre and cable under an agreement signed in Beijing recently. Partners in the new venture — called the Yangtze Optical Fibre and Cable Company Ltd — are Wuhan Trust and Investment Corp, Wuhan Optical Fibre Communication Technology Co (part of the Chinese Ministry of Post and Telecommunications) and NV Philips. The Dutch electronics company will control 50 per cent of the joint venture, which will represent a capital investment of $US366 million. An unknown percentage of the investment will be financed by the Dutch and Chinese governments.

Manufacturing is expected to start in early 1990 and calls for production of 50,000km of optical fibre and 4500km of optical cable annually, mainly for the Chinese domestic market.

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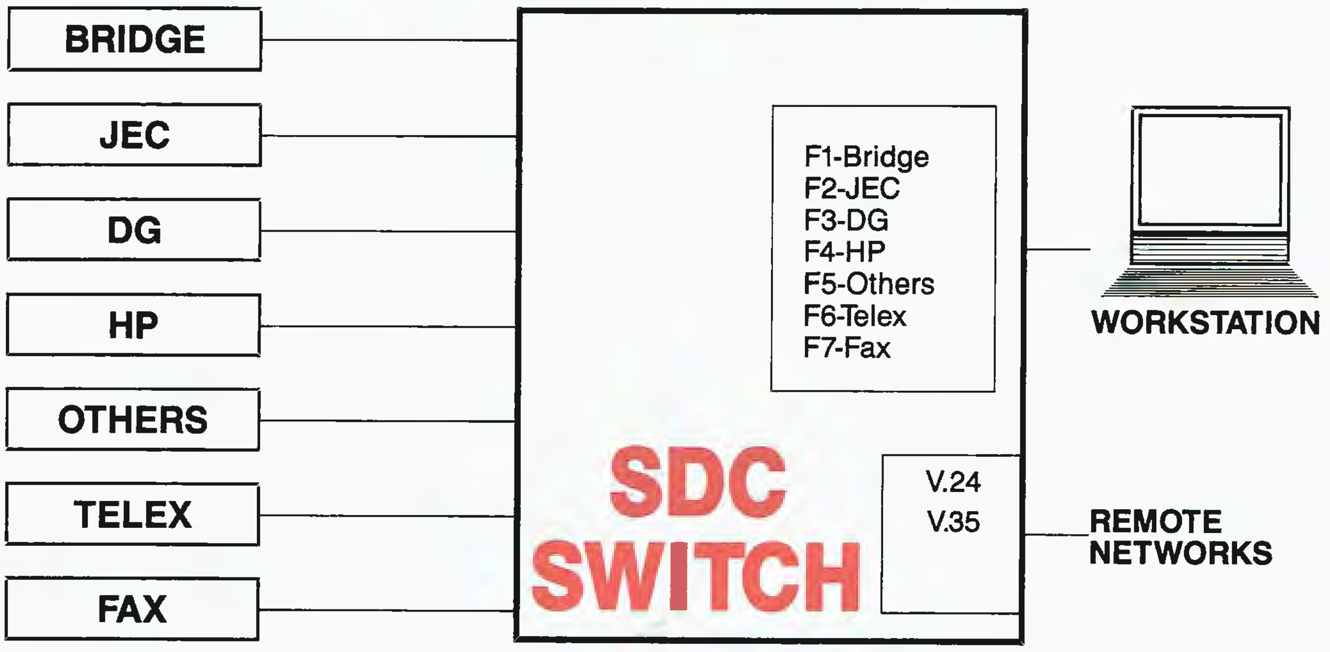

INS's SDC family is the first series of intelligent data switches to offer you all the features required in a local or wide area network.

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ATUG'88 SHOW CASE

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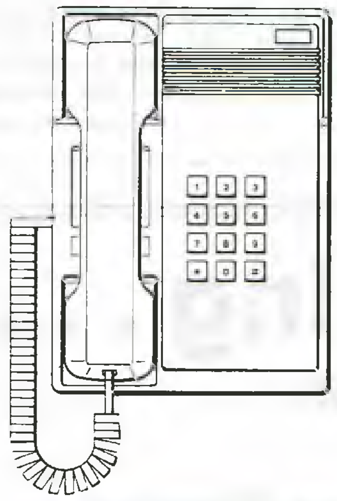

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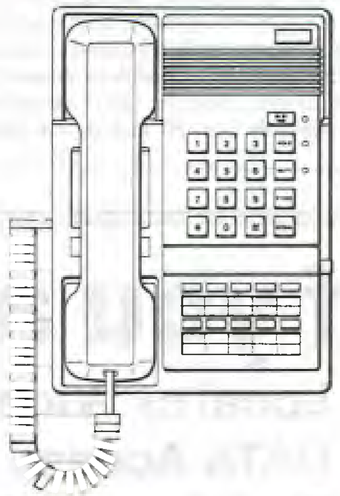

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STAND 7

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STAND 49

NEC

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STAND 49

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Visit our stand 99 & 100 and discuss your urgent communication needs.

Australia Post

(Continued from page 25)

TSLS is particularly useful in the testing of modems, autodiallers, PABX systems during cutover without the need to rent Telecom lines to perform testing.
Cablecon Services Pty Ltd, 19 Bournevale Drive, Berwick, Vic, 3806. Tel: (03) 707-1346.

CATS COMPANY PTY LTD — *STAND 7*

CATSCO Pty Ltd announces its low-cost, high functionality Voice Messaging System. The VMS is associated with a PABX and is available either as a stand-alone or sub set of the highly successful Catcom Private Voice Network Management System. Both products are on display. CATSCO specialises in computer-based, integrated systems for the management of major business assets. The company provides the Telmax range of call accounting and directory systems (together with monitor and Monitor CAP to Telecom). Telmax is on display, as well as Catcom and the Voice Messaging System.
Cats Company Pty Ltd, 466 Malvern Road, Prahran, Vic, 3181. Tel: (03) 51-1565

CITY BUSINESS PRODUCTS — *STAND 1*

CITY Business Products is part of British Telecom, one of the world's largest telecommunications companies which operates in Australia through its subsidary Teletrade Services Pty Ltd. It markets locally the touch-screen dealing system, City Business System, offering now a range of Integrated Trading System terminals that enhance its capabilities and extend its scope to areas such as operation control and data retrieval. Clients include the Commonwealth Bank, Westpac and Qantas. The company will exhibit its color touch screen, plasma touch screen and LCD screen/key console.
City Business Products, 4th Floor, 33 York Street, Sydney, NSW, 2000. Tel: (02) 262 1199

COMRECO PTY LTD — *STAND 70*

COMRECO Pty Ltd and Ran Data Corporation Ltd have joined forces to promote and market a selected range of field proven communications and security orientated products, and specialise in providing consultancy, design and support services for these products. Ran Data Corporation (Perth, WA) designs and manufactures the unique encryption and telemetry technologies of Monte Sala. All manufacturing and R & D is carried out at the company's Perth premises. Comreco Pty Ltd is a wholly owned subsidiary of Total Assets Protection Ltd, and a member of Income Group Limited. The company markets the Ran Data range of products in the eastern states. The Ran Data encryptor is a sophisticated scrambling device for protecting information transmitted over common carrier networks. The telemetry system designed by Ran Data has a multitude of medium to very large applications using specially developed hardware and software. Included are fire security monitoring, industrial process monitoring and control, home and corporate security, security monitoring for government installations and building service (energy control) monitoring.
Comreco Pty Ltd, 17 Kato Street, Hawthorn East, Vic, 3123. Tel:(03) 822 0200

DALLAS DELTA CORPORATION PTY LTD — *STAND 10*

DALLAS Delta Corporation was formed in 1980, to manufacture loudspeaking telephones and has since expanded its operation considerably. The company now manufactures loudspeaking, standard and feature telephone sets in single and multiline, emergency telephones and specialised telecommunication products, such as the Delta and Sigma series of PABX telephone sets. Dallas Delta, which is also the northern distributor for the Novatel series of cellular telephones, has recently received the agency for the Plessey family of third-generation PABX systems. These additions to the product line allow Dallas Delta to fulfill most users' requirements in telecommunications.
Dallas Delta Corporation Pty Ltd, 102 Albert Street, Brunswick, VIC. 3057. Tel: (03) 387 7388.

(Continued page 28)

Darpa speeds up quest for Mach

WASHINGTON — As the US National Bureau of Standards and the computer industry struggle to develop standards for Unix, the US Defence Advanced Research Projects Agency (Darpa) has cast its lot with a relatively new and unknown Unix-based operating system called Mach.

Darpa is funding industry and university projects to ensure that it will become the system of choice for parallel processing and distributed systems in the next decade.

Dumping ground

While AT&T, Sun, Unisys, Microsoft Motorola and others begin to stir the same Unix pot to assure the merger of System V and Berkeley Unix 4.2 is out by mid-1989, Darpa is in another kitchen, working with Carnegie-Mellon University on Mach. The new operating system is built around Berkeley Unix 4.3 and is especially geared for distributed and multiprocessor systems.

Development of Mach was prompted by two forces. First, Darpa's Strategic Computing Initiative spawned new parallel architectures, whose needs were not easily, or optimally, met by existing versions of Unix. Second, the Unix kernel had become the dumping ground for countless new functions so that the operating systems lost the simplicity so loved by programmers.

Avadis Tevanian, a Mach researcher at Carnegie-Mellon, offered this explanation: "Unfortunately, Unix was not designed as a distributed system nor as a multiprocessor system. Mach, on the other hand, has been designed with a goal of creating computing environments consisting of networks of uniprocessors and multiprocessors.

"At the heart of Mach is a simple, extensible kernel designed to support the integrated computing environment of the future," Tevanian said. "The Mach kernel can be thought of as a return to the old, seemingly forgotten Unix philosophy: simplicity."

Although Darpa and Carnegie-Mellon axis provides the focus for development of the new operating system, a number of companies are hopping on the Mach bandwagon. Last month, Encore Computer Corp became the first company to deliver a Mach-based computer.

The company's Multimax 120 parallel processor running Encore's version of the Carnegie-Mellon-developed Mach was

(Continued page 28)

IF YOU THINK THE TOLL TO LINK ETHERNETS IS TOO HIGH...

HAVE WE GOT A BRIDGE FOR YOU!

When you want to link Ethernet systems, do you find yourself paying a high cost in bridges, gateways or repeaters? LANEX has the low cost solution that still offers the big performance benefits.

The LANEX 8023 MAC Layer Bridge can be used to interconnect Ethernets, or Ethernet to Starlan, or either of those to a broadband or fibre optic backbone system. The result is one logical 802.3 network that can span a large geographic area.

A Clever Bridge

The 8023 is easy to install, self-testing, and completely transparent to LAN users as well as to middle and upper layer protocols. Better yet, the 8023 is a clever bridge, with built in features that improve efficiency while cutting your end cost.

Its Adaptive Address Filtering Technique maximises performance by learning which 802.3 addresses are on each port. The bridge then sets up tables listing which addresses are on each corresponding 802.3 port. It selects and transmits only the frames that require bridging, rather than all of them. Each subnet can then operate independently, improving bandwidth utilization and overall system efficiency.

A Real Value

The 8023 MAC Layer Bridge's advanced features allows it to perform more efficiently, transmitting at speeds from 2000 to up to 6000 packets per second. But the cost is a lot less than its competitors ... so the toll is one that just about anyone can afford to pay.

To find out how you can build interconnecting Ethernet systems that don't tie up your budgets, call Allied Data Communications today.

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Data Communications
26-28 Whiting Street, Artarmon N.S.W. Tel: 439 6611
Dealer enquiries welcome.

The 8023 MAC Layer Bridge

(Continued from page 27)

DATACRAFT Data Communication

DATACRAFT AUSTRALIA PTY LTD — STAND 81

DATACRAFT is able to provide corporate networking solutions based on international standards and utilises an impressive array of newly released products. Throughout Atug '88, Datacraft is presenting X.400 messaging, local and wide area integration and includes support for Token Ring, Ethernet, X.25 and OSI standards transported across a 2-Megabit backbone network using bandwidth management multiplexers based on ISDN technology. In addition the range of Micom multiplexers and Datacraft's range of dial modems will be shown.

Datacraft (Aust) Pty Ltd, Maroondah Highway, Croydon, Vic, 3136. Tel:(03) 727 9111.

DATAMATIC PTY LTD — STAND 3

DATAMATIC will be exhibiting a comprehensive range of networking equipment including wide band for voice data and video transmission, wide area equipment with connectivity including X.25, SNA, BSC, DDCMP, ethernet, async etc. and a fully resilient fibre optic extended distance local area network. All networks support a sophisticated network management system. In addition, a comprehensive range of test equipment and protocol analysers will be displayed. These include the new Interview 7000 high speed analyser as well as the Interview series of portable instruments. Datamatic has specialised in data communications for many years with technologically advanced equipment. The company has brought together a range of equipment which it says covers all the data communication requirements of the most sophisticated user.

DATAMATIC

Datamatic Pty Ltd, 9 Byfield Street, North Ryde, NSW. 2113. Tel: (02) 888 1788

DATAPLEX PTY LTD — STAND 15

DATAPLEX is an Australian designer and manufacturer of local area data distribution products including modems, multiplexers, free space optical data links, modem eliminators, data switches, async to sync converters, digital data splitters and coaxial switching systems. A full range of Dataplex locally designed and manufactured products will be on display, along with products from overseas companies such as Comdesign:networking multiplexers, X.25 PADs, the Rad miniature communications product, Adacom: IBM 3270 coaxial distribution access products and Microframe: access security devices. Dataplex provides network design, installation and maintenance services, as well as custom products development.

dataplex
DATA COMMUNICATIONS
EQUIPMENT & SYSTEMS

Dataplex Pty Ltd, 7-9 John Street, Lilydale, Vic, 3140. Tel:(03) 735-3333.

DATARAN SYSTEMS PTY LTD — STAND 96

DATARAN claims to be one of Australia's fastest growing data communications companies, providing an extensive range of communications products for use with large data communications/computer networks. Datatran manufactures an extensive range of patch monitor and switching equipment and says it is now the largest supplier of this type of product in Australia. Other products include wire management and building cabling systems, protocol converters and multiplexers for IBM systems and switching systems. Dataran is dedicated to research and development, utilising state of the art computer aided design and to customise existing products for specific customer applications. New products for 1988 include Symplex data compression equipment and Lattis Net twisted pair Ethernet.

Datatran Systems Pty Ltd, 2-4 Jesmond Road, Croydon, Vic, 3136 Tel:(03) 725-6677.

DBE AUSTRALIA — STAND 25

DBE Australia distributes Ricoh, Japan's number one facsimile and photocopier manufacturer. It also distributes four business automation

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Quest for Mach

(Continued from page 27)

shipped to Ford Aerospace. Ford will use it to develop parallel algorithms and for other research, Encore said.

Encore also has chosen Mach as the operating system to run on its Ultramax computer, a Darpa-funded multiprocessor designed to compute at 1 billion instructions per second. A prototype Ultramax is scheduled for testing this September with a production version due to be delivered to Darpa a year later.

BBN Advanced Computers has ported Mach to its new Butterfly GP1000, a shared-memory multiprocessor with up to 256 Motorola 68020 CPUs. According to Carl Howe, operating-system development manager at BBN, a Defence Department group has ordered a 128-processor version of the GP1000 with the Mach operating system. He would not name the customer.

Sequent Computer Systems has one of its Balance 21000 computers, with 26 processors, at Carnegie-Mellon running Mach. A spokesman said Sequent is waiting to see how well accepted the features of Mach become.

If Darpa decides to fund a robust distribution and support effort for the software, as it did for Berkeley Unix, the company would take that as a signal to offer the operating system commercially, according to Sequent.

Although Encore, BBN and Sequent are the only companies to have gone public with Mach plans, industry sources say IBM, Ardent Computer Corp and Next Inc are considering Mach-based introductions, and some university groups are experimenting with Mach on Cray supercomputers.

In addition, Carnegie-Mellon acknowledged it has Mach running on DEC Vaxes, IBM RT PCs, Sun workstations and a simulator for IBM's RP3 experimental parallel processor. "At least 50 companies have Mach tapes from Carnegie-Mellon so far," said a BBN spokesman.

The spokesman said Carnegie-Mellon had carefully crafted Mach so as to prevent a proliferation of different versions of the software. Mach is released in two modules, one of which is easily implemented because it is machine independent.

Because Carnegie-Mellon has isolated the machine-dependent functions, they are more readily dealt with by each company, Howe said. Also, Carnegie-Mellon's licences require that company-developed enhancements to Mach be made available to the university. "It has a slight Japanese flavor, with everyone working together," the spokesman said.

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In fact, CASE Communications equipment is used in more than 60 countries around the world. A tally that increases every day.

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systems: Kurzweil voice-controlled computing, Hamada offset printers, Compuscan optical character readers, and Bowe forms processing equipment. Many DBE Australia products are on display at this exhibition: The Ricoh NR-1 Mobile Facsimile System allows the transmission and reception of standard facsimile documents from your own vehicle.

The Ricoh FT5590 Photocopier fills the gap in photocopier technology and the laser-printing FX830 facsimile is now recognised as the most cost-efficient system available. The Kurzweil voice-controlled word processing and computing system gives the user an ability to create memos, reports, letters and quotations by speaking directly to the computer instead of by keyboard.

D.B.E. Australia, 12 Barcoo Street, East Roseville, NSW 2069. Tel: (02) 417 7211.

ELECTROTEC PTY LTD *STAND 84*

ELECTROTEC Pty Ltd. is a rapidly growing company in the computer peripheral, accessory and component market place. It supports the retailer, cabler, installer, small business and corporate end user with its imported and Australian made product distribution. There products include: preassembled standard cables; custom cables; LANs; Data switches manual/auto/software controlled; buffers — (up to 2m-bytes); spoolers; line drivers; interface converters; pocket modems; patching systems - (standard to custom); and connectors. Accessories including gender changes, breakout boxes, RJ11/45 to DB25 adapters are available. Power centres and uninterruptible power supplies and computer work station and accessories are also in the range.

Electrotec Pty Ltd, 2 Beaumont Street, Vermont, Vic, 3133. Tel: (03) 873 5638.

Atug'88

EQUATORIAL SATELLITE SYSTEMS AUSTRALIA PTY LTD *STAND 8*

EQUATORIAL Satellite Systems Australia Pty Ltd is an Australian owned manufacturer of VSAT systems for data communications via satellite. The VSATs (Very Small Aperture Terminals) in our range are the K220, a 1.5 metre dish for two way data communications and the K105, a 700mm dish for data broadcast applications. The K220 system is in operation with QNet, the Queensland Government private network. A similar system is now being installed with OTC Australia for SATNET, claimed to be the world's first international small dish data service. On display for the first time at Atug '88 is the K105 VSAT, showing live transmissions from Equatorial's communications centre. The company would welcome interest in the range of new possibilities available through data broadcasting.

Equatorial Satellite Systems Australia Pty Ltd, Level 24, 31 Market Street, Sydney, NSW, 2000. Tel: (02) 261 5773

ERICSSON INFORMATION SYSTEMS *STAND 30*

A new Ericsson telephone system, new telephone instruments and telephony support packages will be launched at Atug '88. The telephone system is an advanced digital programme controlled system for up to 150 extensions and 44 exchange lines. The system has all the characteristics of a PABX but can also operate efficiently as a sub-system to a larger PABX. It will provide all the modern communication facilities including an exciting voice and text message facility. Ericsson telephony support packages display at Atug target hotels, motels and large offices. In addition, Ericsson will demonstrate data integration through its advanced MD110 third generation telephone system. A radio paging system will be connected to the MD110. Another part of the Ericsson display will focus on the Financial Dealer System (FDS10) currently sold to Australian banks and exported to overseas markets.

Ericsson Information Systems, 61 Riggall Street, Broadmeadows, Vic, 3047. Tel: (03) 301 1313

FUJITSU

FUJITSU AUSTRALIA PTY LTD *STAND 83*

THE Fujitsu stand displays advanced commu-

(Continued page 30)

TCP/IP clears a key hurdle

FRAMINGHAM, Mass — A major obstacle on the path to Transmission Control Protocol/Interlink Protocol (TCP/IP) standards was recently cleared when advocates of three proposed TCP/IP network management protocols agreed to a unified approach.

After nearly a year of bargaining, the TCP/IP Network Management Task Force tentatively decided to use a design based on the Simple Gateway Monitoring Protocol, which has been renamed Simple Network Monitoring Protocol (SNMP).

"Simple Network Monitoring Protocol is exactly that — simple," said Jude Estrin, vice-president of 3Com Corp.

SNMP provides a subset of the functionality needed for full-scale network management, focusing on the routers or gateways that allow data to be passed between separate or dissimilar networks.

SNMP subsequently will be melded into Common Management Information Protocol, the protocol used in the ISO's still-embryonic OSI standards for network management.

Quest for Mach

(Continued from page 28)

"Mach has the strong potential to become the successor to the Berkeley family of Unix," said Isaac Nassi, research vice president at Encore. "Mach could become the standard for scientific-technical work, and AT&T-Sun could be the preferred version for the commercial world," he said.

According to a Darpa spokesman, the Mach kernel will be distributed free, possibly via a US-wide network that supplies software, documentation and bug fixes electronically, perhaps as early as next year.

"The Mach kernel will ensure support for multiprocessing. Running above the kernel will be Berkeley 4.X, System V, Posix or something else," the spokesman said.

Notwithstanding Darpa's assertion that Mach is not in competition with other Unix-based operating systems, the Carnegie-Mellon work raises intriguing questions about the future of Unix.

Predicted BBN's Howe: "There's going to be an interesting situation in the early 1990s. Will people wait until the mid-1990s for System V Release 5, AT&T's complete rewrite of Unix (which industry sources say will have greater support for parallel processing)? Or will they go to Carnegie-Mellon?"

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ADVANCED TECHNOLOGY ADVERTISING CASROD/154

(Continued from page 29)

nication products based on the theme "The future is Fujitsu". The main feature of the exhibit is a display and demonstration of Fujitsu's ISDN Terminal, the Imagephone.

Imagephone provides more creative and productive ways for professionals to communicate from their workplace. This is achieved by using simultaneous verbal and visual communications. Imagephone users may create drawings and text documents on-screen. Then, during a voice conversation, a user can transmit the contents of his Imagephone screen to another screen. The identical image on both screens can then be discussed, edited or stored as appropriate. Another product on display is a 64k-bit/sec audio codec for teleconferencing. Through large scale integration, the entire codec fits on only two DSP chips, requires little power (5.1 Watts) and provides 8/16k-bit/sec of auxiliary data. The Codec satisfies CCITT Recommendation G.722. Similarly the Fujitsu FF7500 Group 4 facsimile, suitable for ISDN and with unique networking capabilities, will be on display. Also exhibited will be a range of Fujitsu Ten's car audio products.

Fujitsu Australia Pty Ltd, 71 Queens Road, Melbourne, Vic, 3004. Tel:(03) 529 7633.

HERO ELECTRONICS PTY LTD *STAND 27*

HERO Electronics Pty Ltd. was formed in 1976 and is a manufacturer of telephone call & accounting systems, hotel accommodation computers and fire evacuation and security alarm systems. The company is also the Australian distributor of the Trilogue voice mailing system. Call accounting is the main forte and product ranges from a small self contained unit which will handle 1200 stored calls up to larger units, with capacity in the millions. To compliment call accounting the company produces a directory system with user defined data files, screen layouts and print formats with enquiry on up to 6 different fields, and the ability to enquire or update from any screen. Hero's voice mail system is the Converse Technology Inc Trilogue, which incorporates networking, dialogue generation, facsimile storage and forwarding with a voice message tag, paging and many other features.

Hero Electronics Pty Ltd, 2 Vautier Street, Elwood, Vic, 3184. Tel. (03) 531 8788.

HONEYWELL LIMITED *STAND 45*

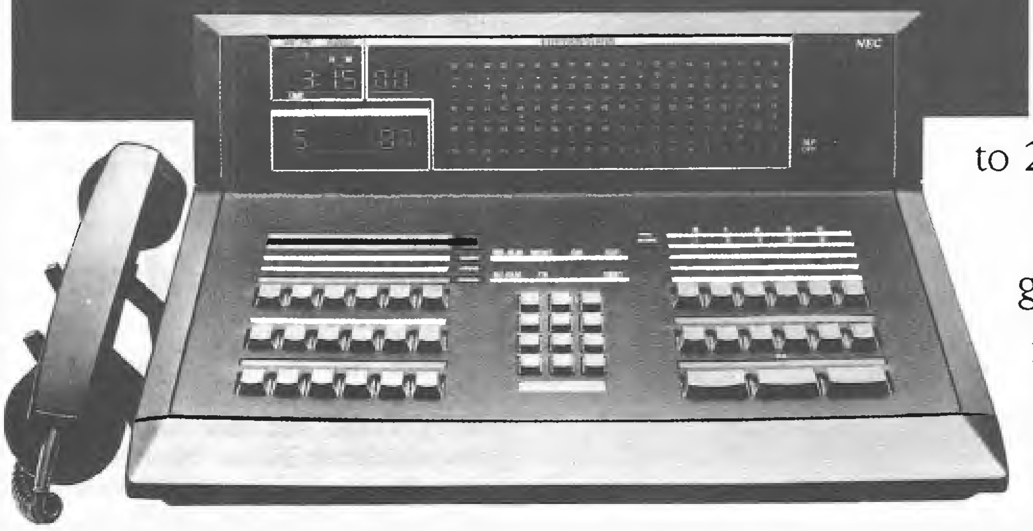
HONEYWELL is showing a range of products from the company's commercial building division. The company expected to be announcing a major tie-up with an overseas telecommunications vendor at the show, but had not signed on the dotted line by the time this catalogue went to press. Honeywell's building products cover building automation, access control, security, telecommunications, lift control, building cabling, fire and system networking. All put together, these items make up Honeywell's Integrated Building Architecture. The company also holds training courses in these technologies, and will detail them at the show.

Atug'88

Honeywell Limited, 863 Bourke Street, Waterloo, NSW, 2017. Tel:(02) 699 0155

C&C Computers and Communications

Does your PABX allow your Managing Director to be in 240 places at once?



The new Voice Mail PABX Module from NEC is just such an innovation. It can answer your phone for you. It can record and send messages from your phone to up to 4,000 other phones within your PABX system.

A message can also be transmitted simultaneously to up to 240 telephones.

But best of all, if you've got an NEC PABX system, it only takes a few hours for us to add the Voice Mail Module.

And just a few hours of our time is nothing compared to the added value it will give to your time.

Managing directors are notorious for needing to be in two places at once. Or three. Or four. Or many more.

And so are sales directors. And sales executives. And secretaries. In fact anybody in any busy organisation.

For these people a PABX system which can also act as a message storage, delivery and answering system is a piece of pure magic.

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NEC
PABX

LINTAS MELB NCX 2022

Software lets PCs access net functions

By Jim Brown

SUNRISE, Florida — US modem maker Racal-Milgo has released software that enables an IBM Personal Computer to act as a control terminal for the company's Communications Management Series (CMS) net management system. CMS PC-Link software enables a Personal Computer to perform the same functions as the asynchronous DEC VT100 terminal typically used to control the DEC PDP-11 minicomputer-based CMS.

With the new software, PCs outfitted with a dial-up modem, such as Racal-Milgo's RM-1822, are able to access CMS network diagnostic, control and network restoration functions. They can also communicate with remote network sites. Personal computers with standard or enhanced color graphics boards are able to access CMS' full-color real-time net monitoring screens.

CMS is used to monitor and control modem and multiplexer networks. The system monitors line quality, response time and line usage. It also sends an alarm to network control operators when a link goes down or network operating thresholds have been exceeded.

CMS PC-Link enables managers to access CMS from Personal Computers in remote locations such as their homes or from laptops or other portable personal computers. The new software can also support simultaneous access to CMS and other Racal-Milgo network products such as CMS Matrix Switch, CMS System Performance Analyser (Span) and CMS Gateway 1 software that links the CMS system to an IBM mainframe.

The $US1500 package can be used, for example, to collect usage statistics and to configure the 4096-port CMS Matrix Switch. The CMS Matrix Switch provide connections between terminals and various host systems.

CMS Span is a software product for the CMS PDP-11 that includes a database that files network alarms and usage statistics collected by CMS. CMS Gateway 1 software resides on the CMS PDP-11. It is used to translate CMS alarms and data files to IBM formats. It enables the CMS system to emulate an IBM 3770 remote job entry workstation while passing that information to an IBM host running IBM's Netview network management system. The CMS Gateway 1 software also enables the CMS control terminal or a PC using CMS PC-Link to appear to an IBM host as an IBM 3270-type terminal.

Jim Brown is new products editor for our US sister publication, Network World

ICL AUSTRALIA PTY LIMITED ***STAND 86***

ICL, a member of the STC PLC Group, is demonstrating a prototype of an ISDN workstation which provides a comprehensive set of voice, data, text and imaging capabilities. The prototype is based upon ICL's current DRS professional work station. The exhibit consists of two workstations, linked via an ISDN simulator, which will allow users to realistically experience the ISDN world. The exhibit, while demonstrating the ISDN services that will be available, also underlines ICL's commitment to OSI and the networked future. This position is re-enforced by STC PLC's investment in telecommunications research via its subsidiary, Standard Telecommunications Laboratories.

ICL Australia Pty Limited, 14 Rodborough Road, Frenchs Forest, NSW. 2086. Tel:(02) 452 9900

IDG COMMUNICATIONS PTY LTD ***STAND 101***

PUBLISHER of Communications World, Computerworld Australia, Australian PC World, Australian Macworld, Digital World and Government Computer News. At the Atug show, Communications World, the newsmonthly for the communications professional, shows off its biggest issue to date: 56 pages including the official show catalogue. Publisher/Editor Luis M. Huesch, Associate Editor David Beynon and National Sales Manager Terry Swan will be on deck for the show and conference and hope to meet as many Atug aficionados, users and vendors as possible. If you miss out, says Luis, please come to the Communications World cocktail at the stand on Wednesday evening and we'll be pleased to make good.

IDG Communications Pty Ltd, 37-42 Alexander Street, Crows Nest, NSW, 2065. Tel:(02) 439 5133.

INFORMATION NETWORK SYSTEMS ***STAND 68***

COMMUNICATIONS specialist, INS will highlight its high performance Lan analyser — The Sniffer. Its is designed to handle Lans such as token ring, Ethernet and Arcnet. The Sniffer comes with the most comprehensive list of protocol suites available today. Other products on display will be a low-cost PC-based protocol analyser, their versatile data PABX (port selector) system and the Comtest range of communications tester.

Information Network Systems, 7th Floor, 10 Help Street, Chatswood, NSW, 2067. Tel:(02) 411 3268

INFOTRON SYSTEMS PTY LTD ***STAND 77***

INFOTRON will be exhibiting its 990 series multi protocol network processors, the advanced network manager (ANM) network control and management system and the 990 compatible SM600 range of low end multiplexers. The SM600s may either be configured as standalone point to point, triangulated networks, or used as feeders to a 990 series backbone network. Also on display, will be the NX4600 intelligent network exchange. The NX4600 is a powerful high speed networking exchange capable of handling up to fifteen 2M-bit/sec links and 4000 I/O channels. A major feature of the NX is its ability to integrate voice, facsimile and video with async and sync data. A G732 interface permits interfacing with voice PABXs.

Infotron Systems Pty Ltd, 61 Lavender Street, Milsons Point, NSW, 2061. Tel:(02) 957 6914.

INTEGRAL FIBRE SYSTEMS PTY LTD ***STAND 19***

INTEGRAL Fibre Systems (IFS) lays claim to being Australia's leading company dedicated to the design, development and manufacture of fibre optic equipment for the Lan environment

(Continued page 32)

10Net sneaks up to OS/2

DAYTON, Ohio — 10Net Communications took a step closer to OS/2 integration when it announced a Netbios-compatible unbundled version of its 10Net local-area network software for use on the IBM Token-Ring and PC networks.

"Because we're Netbios-compatible and support the Server Message Block protocols that IBM says can operate with the OS/2 server code, you can have the IBM PC Lan program running on the workstation or the 10Net software running on the workstation in the Dos environment interoperating with the OS/2 server," said 10Net President Greg Goodall.

He added that the unbundled software provides another alternative to the PC Lan program. "If the IBM PC Lan program is the Chevrolet of the Token-Ring PC network software, 10Net is the Cadillac software module," he said.

However, users already have several other "Cadillac" models to choose from, most notably Novell's Advanced Netware, 3Com's 3+, Banyan's Virtual Networking Software (Vines), and other network operating systems. Novell has the strongest grip on the departmental network market, but Goodall claimed the only entrenched vendor is IBM.

The unbundled version will contain an enhanced version of the 10Net operating system software, electronic mail and caching modules as well as the multi-user calendaring, print spooling, user-to-user communications, broadcast communications and remote job submission software used in the bundled product, according to the vendor. The unbundled version will cost $US395 per node and is slated for delivery in April. Current 10Net users will be able to upgrade for $US195 per node.

STC name change

SYDNEY — Standard Telephones and Cables, which became a member company of Alcatel in January 1987, is now to be known as Alcatel-STC Australia. With a workforce of 150,000 people in 110 countries, and an annual turnover of $A20,000 million, Alcatel ranks as the second largest telecommunications company in the world.

Alcatel-STC chairman and managing director Bill Page-Hanify said: "Even though the name is different, there will be no changes in management, company structure or in the way the company conducts its business."

Dunlop strengthens its grip on corporate communications

"In today's world, business stands or falls by the effectiveness of its communications..."
- John Gough, former Managing Director of Pacific Dunlop (ATUG'87 keynote address).

When the Tyre Division of Pacific Dunlop and Goodyear united to form South Pacific Tyres (SPT), they identified the unincumbered flow of information between more than 500 locations throughout Australia, New Zealand and PNG as vital in achieving corporate success in a competitive market.

With over eighty of their primary centres in constant communication with Head Office, efficient self-control of the network is as important to SPT as minimising line-costs.

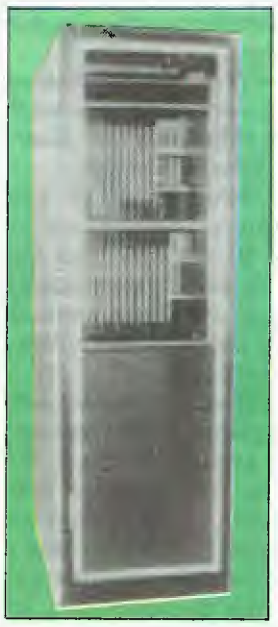
After an in-depth industry survey they selected JNA's AS100 Digital Circuit Switch and Network Management System to be central to their network control.

Designed and manufactured in Australia, the AS100's 'non- blocking' architecture enables SPT to maintain and control access to computer resources in a highly flexible and cost effective manner.

Powerful automatic line monitoring in the AS100 takes the headache out of managing SPT's advanced network.

Lower line costs are enabled through full use of Telecom's Netplex service. All the data traffic from SPT's eighty primary centres is concentrated through only twelve AS100 48Kbps Netplex trunks, using the CCITT X.22 interface standard.

At South Pacific Tyres, and many other organizations large and small, the AS100 has proven itself a vital and effective backbone in their goal of improving corporate communications.



For details on how JNA's AS100 can improve your company's communications
YOU'RE INVITED to examine the AS100 at the ATUG'88 exhibition in Melbourne's Exhibition Buildings, 19th - 21st April, on stand 85

--- or if you prefer simply call JNA now -- and be sure to request your FREE COPY of the excellent publication "THE BASICS BOOK OF DATA COMMUNICATION".

J.N. ALMGREN PTY. LTD.
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CANBERRA (062)48 5422
PERTH (09)481 4034
ADELAIDE (08)363 1900
BRISBANE (07)870 3544

JNA
DATA COMMUNICATIONS

(Continued from page 31)

and for short to medium distance point to point links. IFS also provides support services to companies or contractors wishing to instal fibre optic cabling systems in buildings.

In February 1988 IFS was appointed Australian agent for Fibronics Ltd of Israel, which makes a wide range of advanced fibre optic networking products. IFS display at Atug '88 will feature connectivity solutions using both IFS and Fibronics equipment. Two fibre optic ethernet segments will be connected via repeaters and an infra-red air link. This system will allow ethernet Lan's in two buildings separated by up to 250m to be interlinked at 10M-bit/sec without the need to pass through the Telecom environment.

INTEGRAL FIBRE SYSTEMS PTY. LTD.

Integral Fibre Systems Pty Ltd, 6/19 Rodborough Road, Frenchs Forest, NSW 2086. Tel: (02) 451 7033

INTERCORPORATE COMMUNICATION AUSTRALIA PTY LTD

INTERCORPORATE COMMUNICATIONS AUSTRALIA PTY LTD — *STAND 26*

THE company imports the Israeli-developed Emerald and Coral PABX telephone from Tadiran, said to be rich in user features and facilities. The 40 port Emerald is now available from ICA and its network of distributors, The larger Coral for both voice and data applications will be available shortly. For switchboard operators, for telephone extension users and for the manager, these PABX units are claimed to offer an extremely flexible solution to tomorrow's challenges. Visit the stand for a demonstration and meet the future — today, says ICA.

Intercorporate Communication Australia Pty Ltd, 61 Church Street, Abbotsford, Vic, 3067. Tel:(03) 429 1255.

INTERQUARTZ (A'ASIA) PTY LTD — *STAND 16*

INTERQUARTZ believes its phones not only look good but the company is selling the concept of proven reliability and support with total PABX compatibility. Interquartz Australia, with its head office and manufacturing base in Hong Kong, has invested substantially in research and development into total compatibility of its phones with PABXs and local conditions in Australia. Interquartz will be displaying the latest range of business phones with custom programmable PABX facility codes and other worthwhile features. The company will have factory engineers in attendance, along with sales personnel.

Interquartz, 42 Dougharty Road, West Heidelberg, Vic, 3081. Tel: (03) 459 1341.

JNA DATA COMMUNICATIONS

J.N. ALMGREN PTY LTD — *STAND 85*

JNA is a privately owned Australian company specialising in the design, development and manufacture of complete networking systems for the professional telecommunications marketplace. With more than 27 years of operation, the company lays claim to having produced a number of "world firsts", including a highly successful CCITT X.22 interface for the Telecom's Netplex digital data service service. This has been incorporated in JNA's AS65 Multiplexer and the AS100 Digital Circuit Switch/Network management system. JNA's latest development will be released at ATUG'88. It is a powerful X.25 PAD/switch, the "MegaPAC-J". MegaPAC-J, an integral part of the MegaPAC Family, will provide X.25 PAD or switching functions from any of its 22 ports, making it a highly adaptable component of any OSI network.

J.N. Almgren Pty Ltd, 16 Smith Street, Chatswood, NSW. 2067 Tel: (02) 406 6177

JUST CABLES PTY LTD — *STAND 44*

JUST Cables specialise in the installation of all cabling required for every type of computer used in Australia today. The company will plan, provide, instal, test and hand over sites on time, providing a low maintenance and reliable network. It carries large stocks of high-quality connectors and cables to ensure prompt deliveries

Network market to boom

CAMBRIDGE, Mass — Revenues for the US domestic local network market will increase 20 per cent in the next five years and will top the $5 billion mark by 1992, according to a recent report by Forrester Research.

Servers and software will account for the lion's share of local network sales, said Forrester president George Colony.

Specifically, server sales are expected to double from just more than $US1000 million today to about $US2100 million by 1991, Colony predicted.

Local network software will experience an even more dramatic surge, tripling from the 1988 level of $US728 million to nearly $US2.2 billion by 1991, the survey said.

"There's going to be a runaway market for specific servers," Colony said. "You're going to find very fine gradations of servers performing specific functions in vertical markets."

But while software and server sales are on the upswing, Colony noted that the dollar value of Ethernet and Token-Ring connection sales is declining.

"The dollar value of Ethernet and Token-Ring connections will fall by 25 per cent or 30 per cent over the next five years," he said. "That's due to the lower cost to connect. More connections will be built into personal computers a standard feature in the future."

The end result, Colony predicted, is that "local networks will increasingly resemble RS-232 as invisible system features."

Colony said, however, that while the dollar value of Token-Ring and Ethernet connections is shrinking, unit numbers of these connections are expected to increase.

"The real message is that, in the future, there won't be any money made in selling connections," he said. "Users aren't going to pay extra for a Lan connection."

Increasingly, revenues will be derived from servers and software, he said, and that fact will fuel the current trend of mergers and acquisitions in the software/connection industries.

"It's obvious when you see companies like Bridge (Communications) and Ungermann-Bass, which are in the connection business, being acquired by soft-

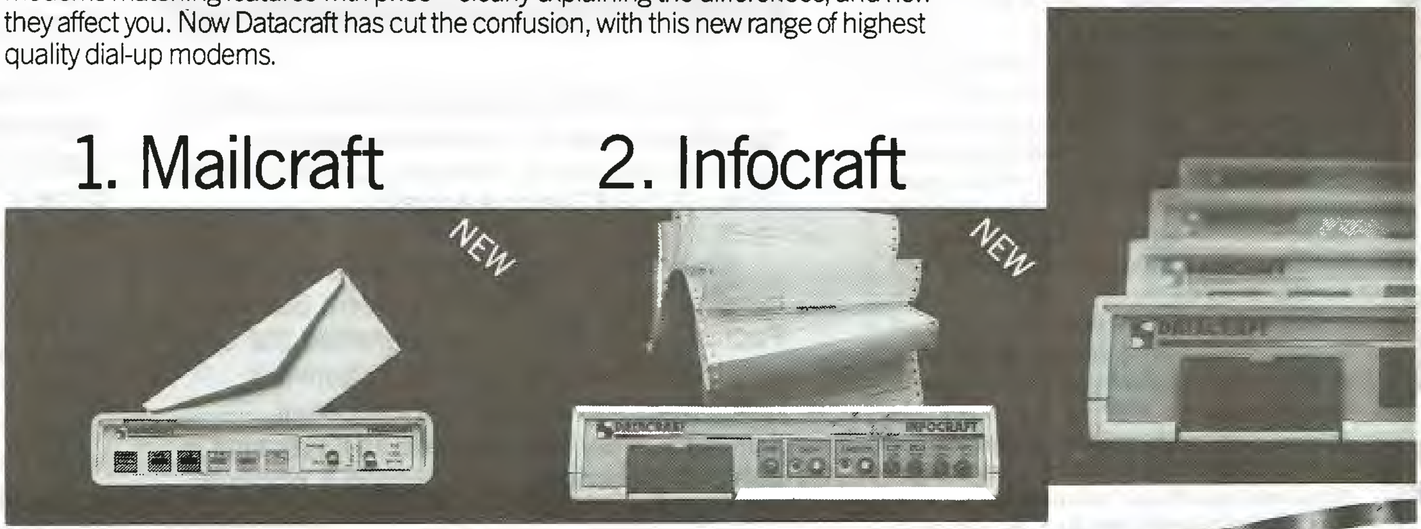
(Continued page 33)

We've simplifi
choosing a qu

Until now modems have been an alphabet soup of letters and numbers and features. It seemed that nowhere could you find a straightforward evaluation of modems matching features with price – clearly explaining the differences, and how they affect you. Now Datacraft has cut the confusion, with this new range of highest quality dial-up modems.

3. Quadcr

1. Mailcraft 2. Infocraft



1. Mailcraft For most occasional users of data communications, this modem is your low-cost entry to the world of electronic mail boxes, Viatel, and point-to-point file transfers.
Speeds: 300 and 1200/75 bps.

2. Infocraft Datacraft quality at a low cost. Point-to-point information transfer for retailers, motel chains and legal firms, where reliability of data is particularly important. Connects with all major computer systems so it will link PCs to a mainframe host, or to a database or to other PCs. 1200 bps, Hayes autodial.

3. Quadcraft Unbelievable price for an error correcting quad: this four-speed dial-up modem connects to most data services, mailboxes, bulletin boards and computer sites around the world. Will automatically call, answer, and adjust itself to the other modem's speed. Ideal if you regularly access subscriber databases. Or for a branch which

Dealer Enquiries Welcome

Datacraft (Aust.) Pty. Ltd.
Vic. (03) 727 9111, Fax (03) 726 5300, Telex AA34278,
Syd. (02) 436 1099, Bris. (07) 371 7655, Adel. (08) 79 9211,
Perth (09) 481 0955, Canberra (062) 81 5344.

of flat-ribbon, round-core, co-axial assemblies, Lan or Ethernet type system cables and fibre optic cables, all manufactured to the highest standards. Its products meet the exact specifications of major equipment manufacturers, and prices are said to be more than competitive. Just Cables also makes interface switches and patching systems and other products for individual applications.

Just Cables Pty Ltd, 2/157 Hyde Street, Yarraville, Vic, 3013. Tel: (03) 689 3066.

KRONE (AUST) TECHNIQUE PTY LTD

STAND 104

KRONE Australia has on display the complete range of its trend setting LSA-PLUS insulation displacement termination system. This no stripping, no soldering and no screwing termination system with time proven reliability, is the simple solution to wire termination, testing, patching and over-voltage protection in one product package. Continuous enhancements allow LSA-PLUS to enter data communications areas.

LSA-PLUS has been proven to successfully terminate a wide range of multi-strand data cables and the new connectorised modules offer an interface to ribbon, telco, AMP-Champ and other types of multi-wire systems. Krone Australia is now the Australian distributor for Sankosha over-voltage protection products. Through this association, Krone offers a wide range of protection units for Telecom CCTS, RS232 and RS422 data CCTS and mains power supplies. Also on display at the Krone stand is the PSI Lightlinker low loss Mechanical Splice system, PSI re-enterable cable jointing enclosures and the very inovative DiCon fibre optic switch.

Krone (Aust) Technique Pty Ltd, 2 Hereford Street, Berkeley Vale, NSW, 2259. Tel: (043) 884 422

LANE TELECOMMUNICATIONS PTY LTD

STAND 33

LANE Telecommunications considers itself to be one of Australia's leading telecommunication strategists, providing expert engineering and project management skills. Services include working with clients to develop corporate telecommunication objectives to complement the organisation's mission, analysis of the current and future requirements based on the objectives, development of detailed strategies to implement chosen objectives and detailed engineering design for networks involving such equipment as packet switching, PABX, ACD and network management systems. Among the company's clients are the new Parliament House, the Australian Taxation Office, the NSW Electricity Commission and Coles Myer.

Lane Telecommunications Pty Ltd, 111 Conyngham Street, Frewville, SA, 5063. Tel: (08) 379 0211.

LJA PUBLIC RELATIONS (MOBILTRONICS)

STAND 94

MOBILTRONICS, claiming to be a leader in the cellular telephone market, says it has the answer to communications problems for people who are always on the go. "While on the road, at home or on business, keep in touch with the Mobiltronics pocket phone. It is the smallest, lightest, most advanced cellular phone in the world. It is sleek, easy to handle and the size of just two cigarette packets. Weighing 530g, it tucks neatly into the pocket. It is the ultimate step towards an efficient, profitable business, and, being constantly on line, it means that the traditional answering machine is no longer necessary," asserts the vendor.

LJA Public Relations (Mobiltronics), 2 Trentwood Avenue, North Balwyn, Vic, 3104. Tel: (03) 857 8148.

LOGICA PTY LTD

STAND 11

LOGICA has been established in Australia since 1975 and with offices in Melbourne, Sydney and Canberra, provides an Australia wide network of expertise. Logica's parent company was formed in the UK in 1969 and is listed on the

(Continued page 34)

Net market set to boom

(Continued from page 32)

ware systems companies like 3Com and Tandem," Colony said. "And I think we'll continue to see more acquisitions of this nature."

What companies are most likely to be acquired? Excelan and Sytek, Colony said. He would not, however, speculate about potential buyers.

The Forrester report divides the local network market into two segments: peer local-area networks, which are composed of workstations or personal computers, and general purpose local-area networks linking terminals to host computers. "Beyond 1990, we're forecasting that peer local-area network shipments will outpace sales of general purpose local networks," Colony said.

Fueling this trend will be the burgeoning population of personal computers the movement to client/server computing and an explosive server market.

"The old model of connecting terminals to processors is headed for the computer trash heap," Colony said. "Peer Lans are going to be the glue linking large populations of PCs to the growing zoo of task-specific servers."

The only major factor that could change the direction of the local network market is the Fibre Distributed Data Interface (FDDI), Colony said.

"FDDI, when it gets here as a viable technology in 1991, is going to threaten Token-Ring and Ethernet because it's 10 times faster than either of them," he said.

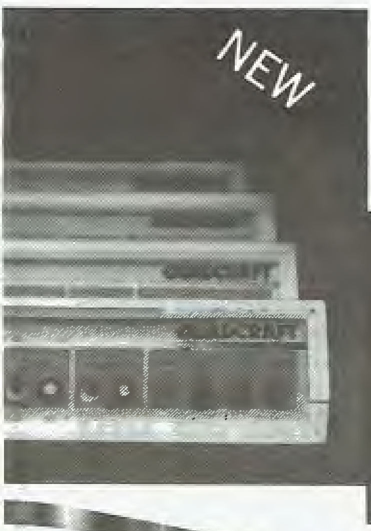
DEC extends OSI access

DIGITAL Equipment Corp has extended its Network Applications Support program to provide a universal access to services on the open Decnet/OSI network. The enhanced Network Applications Support allows customers to communicate and share information between Vax/VMS, Unix, Apple Macintosh, MS-Dos and OS/2 and the Vax VT family of terminals. Decnet/OSI network services include All-In-One/Dec windows, Enterprise Info Services, document services, and database access. DEC recently announced a new Decnet licencing policy under which any Vax running Decnet is automatically licenced as a PC server.

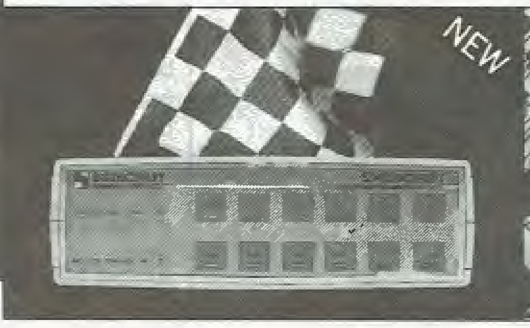
ed the craft of
uality modem.

aft $959*

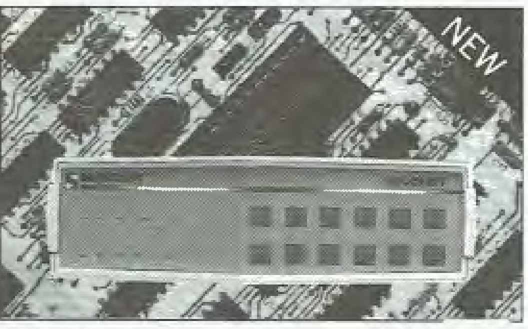
Specified and designed to suit exacting Australian and world-wide standards, the new range was produced in conjunction with world-renowned Concord Data Systems. Added to which they have the blue-chip back-up of Australia's most reputable data communications company.

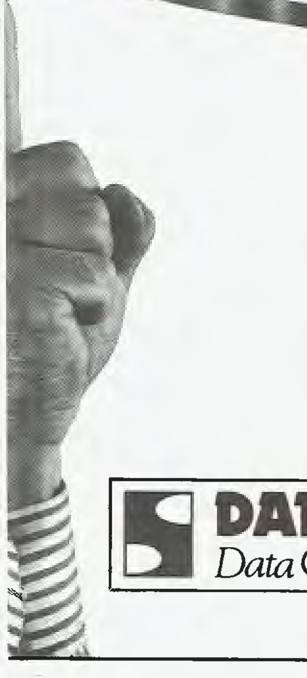


4. Speedcraft



5. Procraft





frequently exchanges information and data with head office. 2400 bps.

4.Speedcraft Remarkable performance for price: a 4800 bps full duplex modem, with error correction reliability. Which means it's fast. Makes short work of big file transfers like stock reports or hefty documents, with the kind of speed you would only expect to achieve on a leased line. A quad dial-up modem, Speedcraft can call, answer, and select speed, all automatically.

5. Procraft Here's the real professional model: ultra-fast at 9600 bps, for heavy duty work like the daily transfer of bank transactions, large data files or computer graphics. Uses world-acclaimed V.32 Trellis Coded Modulation techniques to enhance transmission. For every conceivable feature, there isn't a dial-up modem to touch this new Procraft. Call Datacraft for brochures detailing the many features of these top-quality modems. Datacraft, or our nearest dealer, will turn choosing a modem from guesswork – into a craft.

*RRP inc. tax. Includes error correction.

DATACRAFT
Data Communication

The leading data communications company is Australian.

DC644/BEATTY

(Continued from page 33)

London Stock Exchange. With offices in the UK, the USA, Australia and 10 other countries, Logica worldwide employs 2700 professionals and enjoys a turnover in excess of A$250 million per annum.

Operating in a variety of markets, Logica's international capabilities are utilised in the areas of strategic consulting, requirements specification and equipment selection, systems design and implementation, technical and advanced systems development, communications consulting, and market studies in high technology. ***Logica Pty Ltd, 12th Floor, 30 Collins Street, Melbourne, Vic, 3000. Tel:(03) 654 1333***

MAGNATECH **STAND 75**

MAGNATECH is illustrating its operations in the satellite and communications sphere. On display are satellite systems using RSI and Satcom antennas, LNR modems, exciters and down converters, multipoint IBS modems and fly-away ENG and data packages, microwave links from M/A-Com for video, 2/8M-bit/sec and Ethernet connections as well as Digital Microwave's 2-34M-bit/sec from 13 to 23 GHz, RF broadcast capability using Itelco transmitters and Sira antennas for TV and FM, Wegener sub-carrier and data products for FM and flexible digital multiplexers.

MAGNATECH
MAGNA-TECHTRONICS (AUST) PTY LTD

Magnatech, 7-9 George Place, Artarmon, NSW 2064. Tel: (02) 427 0666

MAYNE NICKLESS
COMPUTER SERVICES

MAYNE NICKLESS COMPUTER SERVICES COMMERCIAL DIVISION **STAND 35**

MAYNE Nickless Computer Services, is announcing the introduction of its MayneNet Australia-wide private packet network value-added service, offering fast, accurate and secure data transport. Support to instal and manage the network, high level security and accounting reports for cost analysis and evaluation are provided and access is available in all capital cities and major centres. MayneNet and its electronic mail service, MayneMail, will be on display and fully functional.

Mayne Nickless Computer Services Commercial Division, 189 Phillip Street, Waterloo, NSW 2017. Tel:(02) 318 9333

MITEL TELECOMMUNICATIONS LTD **STAND 1**

Mitel Telecommunications is a leading manufacturer and supplier of advanced PABX systems, with British Telecom holding a majority interest. 1988 marks the first full year of Mitel's operation in Australia and the Atug '88 exhibition sees the full national launch of its digital SX-50 PBX. The product is specifically aimed at the 20-to-80-line small business market and provides, as standard, features not usually found on competitive models. One of its unique elements is the Superset 4 feature phone which boasts the most advanced interactive display capabilities currently available on the market. It is now being sold and supported nationally throughout Australia by Mitel's dealer network and is being demonstrated at Atug '88. ***Mitel Telecommunications Ltd, 4th Floor, 33 York Street, Sydney, NSW, 2000. Tel: (02) 262 1199.***

PHILIPS

PHILIPS

Philips PABXtraordinary display.

Introducing the remarkable SOPHO-S Digital PABX range. From Philips.

Internationally acclaimed. Now on display in Australia on Stand 13 at ATUG.

The range of Philips SOPHO-S technology is internationally proven. With its adaptability from 20 to 20,000 lines, future-proof architecture, high reliability and strict adherence to international CCITT standards, it's hardly surprising SOPHO-S systems are already operating in more than 30 countries.

As part of the SOPHO-S active display, Philips will also be demonstrating their family of Telephone Management Systems (TMS).

The TMS Module gives users remarkable flexibility, monitors cost and usage and offers capabilities specifically tailored to their business.

Also on display are the latest additions to the Philips Small Business Exchange (SBX) Systems (around 3,500 SBX systems have been installed throughout Australia) and the first presentation in Australia of the complete Philips telephone/terminal ranges.

Best of all, the Philips Display at ATUG will take the form of working business environments: Industry, Interdepartmental (SBX System), Hotel/Motel and Finance/Banking.

It's your opportunity to take a closer hands-on look at the future of Switching technology in Australia. From Philips.

SOPHO-S operator console with VDU.

Take a closer look at the new Philips PABX range. Stand 13 ATUG 88.

PHL0003

NCR adds net tools, windows to ITX O/S

NEW YORK — NCR gave its answer to IBM's Systems Application Architecture last month when it unveiled a number of new tools for its Interactive Transaction Executive (ITX) — a Unix-based operating system — and showed a computer family called System 10000.

The System 10000 hardware, bundled with ITX, is based on NCR's 32-bit processor technology. Up to four of the systems can be linked.

The System 10000 runs multiple ITX and PC jobs on a PC through nine windows, an adaptation of Microsoft Windows 2.0, according to the vendor. Like SAA, ITX produces system-wide applications with an onscreen tool called Corvision. This set of pictorials, developed by Cortex Corp, includes icons, pop-up menus, and windows that represent an application. Users construct system diagrams that define menus, screens, reports, and file relationships. Corvision then generates machine-level code and compiles it.

ITX's Information Bridge gives multiple users access to PC-shared and centralised files. The utility includes electronic mail and filing to retrieve shared files.

ITX-Net handles remote file transfer and job activation and can distribute workloads between computers. ITX reportedly supports SNA and OSI standards for peer-to-peer and subordinate-to-host connections.

Austral snares big fibre order

MELBOURNE — Austral Standard Cables recently won a $A24 million contract to supply a further 75,000km of optical fibre cable to Telecom over the next two years, mainly for minor trunk route and inter-exchange link expansion.

ASC general manager Alan Locke said winning the tender, one of the most important it has ever made to Telecom, "will boost our prospects in exports markets".

The cable will be manufactured at the company's Clayton, Victoria plant in sizes ranging from 2-60 fibres from fibre made by Optical Waveguides Australia, a joint venture between ASC parent Metal Manufactures Group, AWA and Corning.

The company claims to be Australia's main supplier of optical fibre cable, having earlier won orders worth $A80 million from Telecom alone. This included 30,000km for the Melbourne-Sydney link; 21,000km for a WA connection; and 12,000km for the Tennant Creek — Port Augusta route. Metal Manufactures also supplies all of New Zealand's optical fibre needs through its NZ subsidiary.

NEC AUSTRALIA PTY LTD ***STAND 64***

THE company manufactures and markets a wide range of communications equipment, systems and components. These include television and radio broadcasting equipment, telephone systems and components and voice and data switching systems as well as radio pagers, cellular mobile telephones and facsimile equipment. NEC is showing its NEAX 2400 SDS PABX system. It offers flexibility and expandability with a building block hardware design and free port assignment that allows unrestricted assignment of extensions and trunk lines. The company is introducing intelligent digital multifunctional terminals. The Dterm 6D and 16D telephones are equipped with microprocessor control to complement the NEAX 2400 SDS and give even more convenient features for any system. NEC is using Atug '88 to launch the Nefax 25, and shows the full range of NEC facsimile equipment and cellular telephones, from fully car mounted systems to complete portables. Pagers and paging systems are being demonstrated.

NEC Australia Pty Ltd, 4th Floor, 11 Queens Road, Melbourne, Vic. 3004. Tel: (03) 267 6355.

NETWORK AUTOMATION PTY LTD ***STAND 28***

Network Automation is presenting its OptiNet packet switch, a distributed packet switching system which caters not only for international standard interfaces such as X.25, X.3, X.28, X.29, but also for proprietary interfaces such as SNA, bisysnc and UTS, as well as asynchronous transmissions. In addition, OptiNet emulates proprietary terminals including 3270 and Sperry UTS allowing universal access from a single dumb terminal to a variety of different types of host systems. A text and graphics based based network management system enables the user to manage and control the network efficiently and cost effectively.

Network Automation Pty Ltd, 61 Lavender Street, Milsons Point, NSW. 2061. Tel: (02) 929 4988.

(Continued page 37)

NETWORK MANAGEMENT

OSI-based tools may trip up users

IBM's Netview, and an ISO/OSI standard, will emerge as the two most important models for network management systems in the next decade. In the meantime, users should be aware of purported "OSI-compliant" solutions. Paul Korzeniowski, senior writer with *Network World,* looks at the evolving standards in the following article.

USERS who invest in network management systems based on international standards may eventually find themselves locked into using proprietary interpretations of those standards.

The irony stems from the immaturity of the International Standards Organisation's (ISO) Open Systems Interconnect (OSI) network management standards. Standards committees have only broadly outlined ISO network management functions, and the timetable for filling in the framework stretches out to 1990. The standards are designed to enable customers to control heterogeneous devices running on an OSI network.

Rather than waiting for standards to be finalised, AT&T and Codex last year unveiled network management systems based on the evolving standards model. The companies have filled in the missing pieces with their own interpretations of how the standards will evolve.

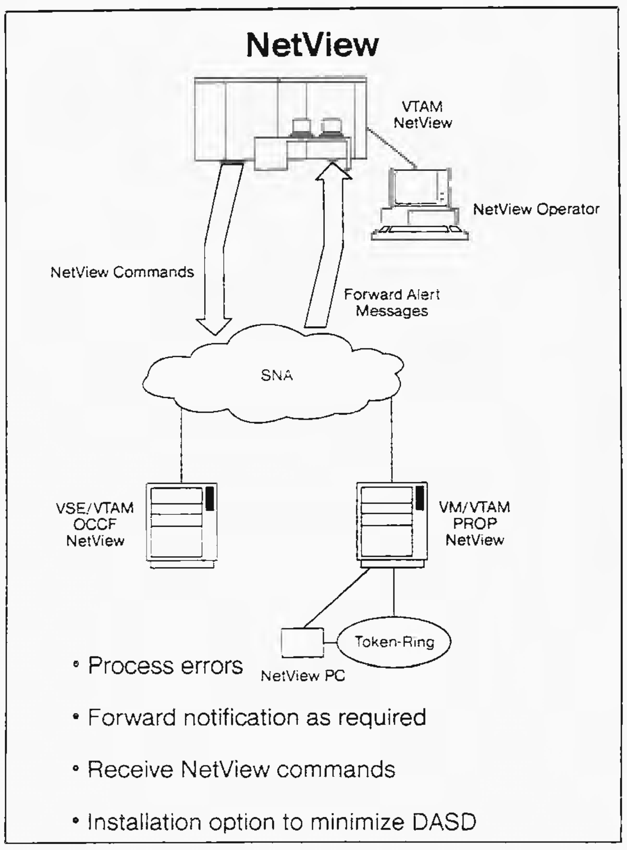


Diagram courtesy IBM Australia

"Vendors building OSI network management systems today are taking a substantial risk," said John Neumann, senior principal architect at Retix, a Californian OSI software company. "The standards are far from stable and almost certain to change."

Standards change as they move through the three-stage standards-making process. In the first stage, a committee draws up a draft proposal outlining desired functions. The draft is then submitted to members of the standards committee for review, where it can be drastically altered. This process typically requires at least nine to 12 months.

Once the committee members agree on a draft proposal, the work becomes a draft international standard. Vendors feel comfortable designing products based on draft international standards because, typically, few changes are made from this point on. But the committee has nine to 12 months to examine its work before the draft standard finally becomes an international standard.

OSI network management standards are broken down into five parts, some of which are further along in the standards process than others.

The first part, the OSI network management framework, broadly outlines the functions OSI network management would perform. Work on this standard began in 1979, and various proposals have been passed around the world 11 times, according to Trudy Reusser, who serves on one network management committee and oversees network management standards work at Hewlett-Packard Co. The framework is at the draft international standard level and is scheduled to become an international standard this year.

The second piece comprises the Common Management Information Services (Cmis) and Common Management Information Protocol (Cmip). These two standards outline how network management information should be packaged and sent

(Continued page 37)

Australian telephone systems manufacturer, Tytel, has released a revolutionary product which will challenge the Commander range of small business systems.

The Tytel 800 Series LANX Telephone System makes its debut at ATUG 88. Being very simple to use, easy to install, and providing an extremely wide expansion range, it will be sure to attract a great deal of attention from visitors.

The LANX joins the existing, well-accepted selection of Tytel executive and office telephones, which are also on display, to complete a full range of business communication equipment.

See the LANX on Stand No. 36/37

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STAND 49

NEC

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ADC's remote test access products are designed to be installed at remote, unattended network hubs to provide a point of remoteable access to RS232 communications lines. The access switch cards permit the operator to connect a test/monitor bus to the circuit to either "Test-breaker Access" or monitor on a "non-intrusive mode.

Features:
- Circuit access at unattended remote sights
- Menu control across dial-up lines.
- Uses standard Ascii crt.
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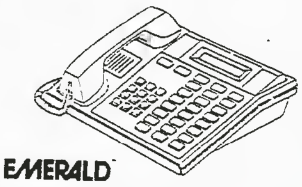
INTERCORPORATE COMMUNICATION AUSTRALIA PTY LTD

I.C.A. are proud to launch the brilliant EMERALD P.A.B.X. at A.T.U.G. '88. See us on Stand Number 26.

EMERALD, rich in features and facilities for those businesses who demand excellence of operation at their workplace.

Contact us for the name of your nearest distributor.

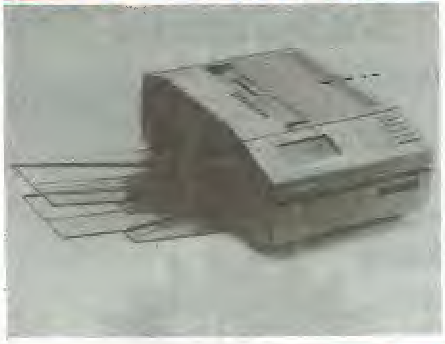


EMERALD

PABX
NEC's state-of-the-art integration of computers and communication technology once again offers guarantee of high performance and outstanding reliability with the NEAX 2400 SDS. The building-block hardware design of the NEAX 2400 SDS means that the system will grow as your company grows.
STAND 49

Voice Mail Module
NEC's integrated approach gives you one system instead of two. NEC voice mail can be built into your system at any time. Find out how by visiting our ATUG exhibition.
STAND 49

NEC



NEFAX 25
NEC now offers a new standard in facsimile transceivers. The NEFAX 25; cost effective, streamlined operating procedure, speed and efficiency. Put the NEFAX 25 to work for you and create the kind of inspired efficiency your workplace has never known.
STAND 49

NEC

AUSTRALIAN TEL-TEC PTY LTD

NEW INSULATION DISPLACEMENT DISCONNECT & CONNECT BLOCKS
ADC's unique split cylinder concept does away with the time consuming jobs of wire-stripping, wrapping and soldering. Instead the technician simply punches the wire into the cylinder, which automatically cuts and strips the wire and makes the connection.

Block Features:
- Individual break access with protection in place.
- Flexible modular design
- Built in test jacks.
- Integrated earth contact
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- Wide wire range.

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VOICE MESSAGING SYSTEM RELEASED AT ATUG SHOW

LOW COST,
HIGH FUNCTIONALITY
STAND 7

JNA

MegaPAC

The complete OSI networking system.

High speed packet switching (1100p/s+), protocol transparent, PC-Host links, LAN resource sharing, multi-session PCs, powerful network control and management are all offered in the one network system.

See it all at stand #85

(Continued from page 35)

NEIL EVANS SUBSCRIPTION SERVICES ***STAND 69***

Neil Evans Subscription Services is the accredited representative in Australia for McGraw-Hill publications Co, US — field sales division, and as such is responsible for arranging new and renewal subscriptions to all McGraw-Hill technical magazines and newsletter services. Of special interest to visitors to Atug '88 is the show special rate available on the following publications: Byte, $A3.50 per copy; Data Communications, $A5.50 per copy; Electronics, $A4.70 per copy; and, Business Week International, $A1.55 per copy.

Neil Evans Subscription Services, P.O. Box 30, Marayong, NSW 2148. Tel: (02) 831 3323.

NOMAD COMMUNICATIONS PTY LTD ***STAND 95***

THIS company has been a successful contributor to the growth of the cellular mobile telephone market and this year is its first as an Atug exhibitor. Nomad is showing its cellular range of telephones, voice messaging services and also its range of refurbished Telecom-backed Commander key systems. The company aims to become an important player in integrated communications systems and is developing a consulting package.

Nomad Communications, 297 City Road, South Melbourne, Vic, 3205. Tel: (03) 696 1900.

OLEX CABLES

OLEX CABLES ***STAND 88***

OLEX Cables is a division of Pacific Dunlop Ltd, and manufactures a wide range of building wires, power cables and communication cables. In the communication cable field, Olex is an established major supplier to Telecom Australia and to the Australian defence industries and as such, guarantees a quality made product of local manufacture. Olex will design, supply, instal and test optical fibre communication systems. Optical fibre cables are manufactured at its Victorian plant using fibre that is produced on the same site. A range of quality equipment that is an integral part of a fibre optic system is also available from Olex. System products including connectors, multiplexers, modems and enclosures will be on show.

Olex Cables, 207 Sunshine Road, Tottenham, Vic, 3012. Tel:(03) 316 2222.

ONHOLD COMMUNICATIONS PTY LTD ***STAND 91***

THE company produces audio messages to be played when invoking the on-hold facility in telephone systems. Pointing out that frequently "on hold" distractions are at best a irritation, the company argues that instead, these messages should part of the company's promotional activities. The company believes that this medium has much to offer and it supplies a total package including hardware as well as the message tapes. Changes are available as often as required and professional service is available to country and interstate clients. OnHold is seeking agents.

OnHold Communications Pty Ltd, 1 Wynyard Street, South Melbourne, Vic, 3205. Tel: (03) 690 6100

Atug'88

ORBI-TEL COMPUTERS ***STAND 71***

SYSTEMS Reliability PLC, an international organisation that manufactures and markets the Tel-Tag call accounting system, introduces its Australian subsidiary, Orbi-Tel Computers. The company displays the Orbi-Tel voice network management system, which it claims is "the only true network management system available in Australia." Also available are the Prism electronic directory system and Status, a hotel guest and telephone management system. A full portfolio of systems is offered by the company.

Orbi-Tel Computers, 123 Camberwell Road, Hawthorn, Vic, 3122. Tel: (03) 811 9961

OTC — THE OVERSEAS TELECOMMUNICATIONS COMMISSION ***STAND 55***

AT Atug '88, OTC — Australia's international telecommunications carrier—will be demon-

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OSI-based tools may trip up users

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to different systems. Cmis and Cmip are scheduled to move from draft proposal to draft international standard in this quarter.

The third part is the information sent between different systems. The ISO standards body has divided this work into two categories. One committee is defining configuration, fault and security information, a task that should reach draft proposal status next month. A second group is examining accounting and performance management, items scheduled to become draft proposals in December.

The fourth and fifth items are needed so Cmis and Cmip can exchange messages between different computer systems. Directory services provides a central listing of all information on a network. Directory services will become an international standard by the middle of the year.

The last item, Collision Concurrency and Recovery (CCR), sets up guidelines so information can be retransmitted if there is a problem along a connection. CCR will become an international standard by the third quarter of 1988.

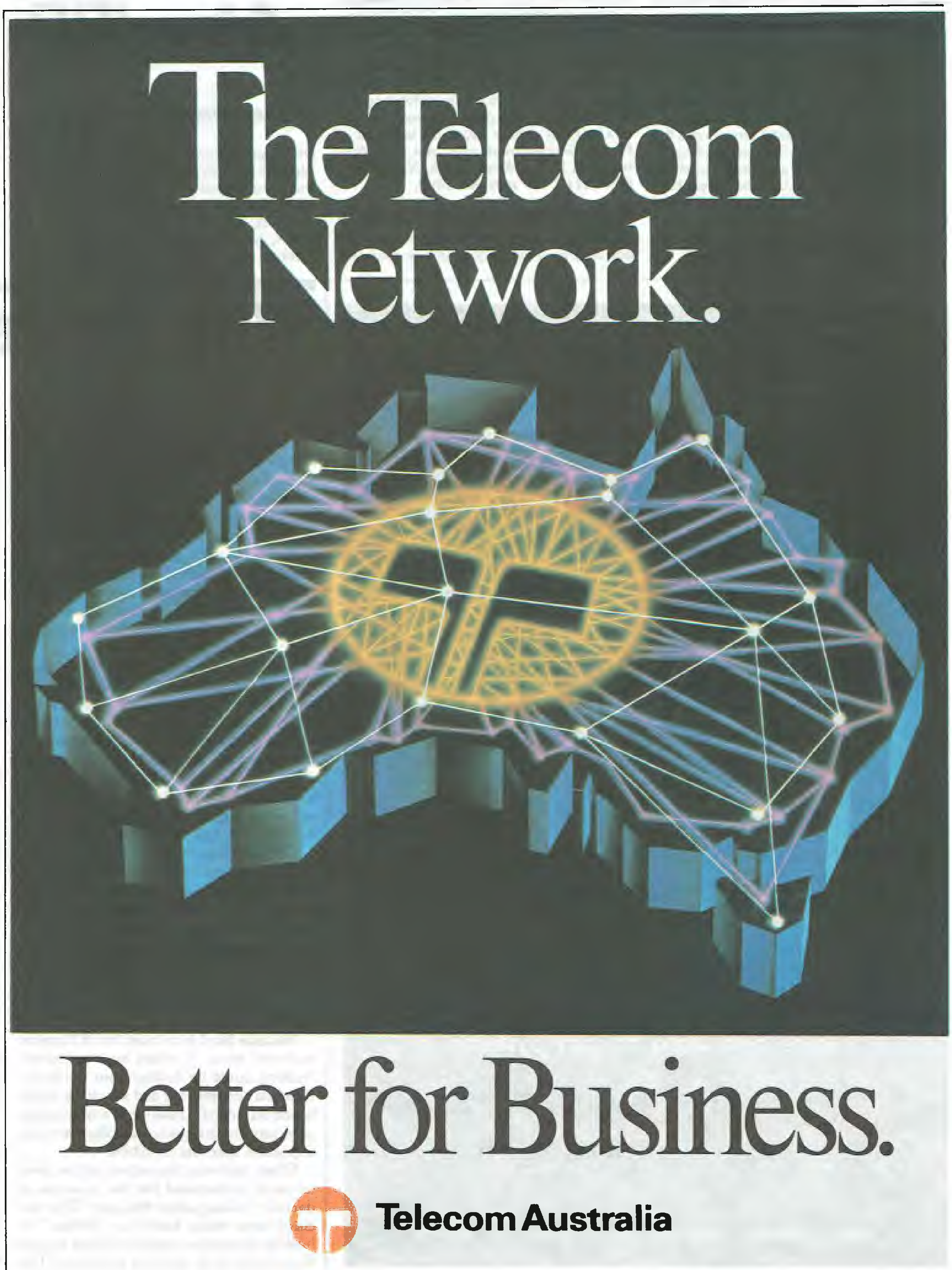
Reusser said none of the standards has reached international standard status so no vendor can offer products that truly comply with the model yet.

Analysts generally agree that ISO and Netview will emerge as the two most important models for network management systems in the 1990s. This assumption has been based on the belief that there will be only one OSI network management system, a scenario that may never materialise.

Rather than passively waiting for the standards to emerge, vendors are are choosing allies. Timeplex and Avanti Communications will support AT&T's network management system. AT&T reportedly also plans to woo other supporters. Codex is working with HP and Northern Telecom.

The alliances serve two purposes. If a vendor garners sufficient support, its product may become a de facto standard.

So customers as well as vendors may be taking a substantial risk. "Customers should not buy an OSI network managment system without a warranty from the vendor," Neumann said. "Once the standards are completed, the system should be changed to conform to the protocol stack at no expense to the customer. Customers are buying an OSI network management system for interoperability and should expect nothing less once the dust settles."


The Telecom Network.
Better for Business.
Telecom Australia

(Continued from page 37)

strating both its own Data Access service and the Keylink e-mail service it offers jointly with Telecom. Data Access gives users access to the world's major databases, while Keylink has been recently enhanced to provide PC users with a range of value added features. Also at Atug '88, OTC consultants will provide attendees with information on the commission's full range of products, including video-conferencing, OTC Satnet — a small dish satellite service said to be ideal for linking a number of remote locations, and OTC Skystream which employs the latest technology to provide what OTC bills as the most complete and versatile range of business data services available, worldwide.

OTC - The Overseas Telecommunications Commission, 231 Elizabeth Street, Sydney, NSW. 2000. Tel: (02) 230 5000.

PACIFICNET

PACIFICNET SERVICES PTY LTD *STAND 84*

PACIFICNET Services, which began business with a cost-saving telex switching service, is building its resources to become a key communications provider. Since the early days of its first service, Pacificnet has built up the product range to cover wide areas of communications services. Among concepts to be discussed on the stand are network telex and facsimile systems, telex switching, priority services and the Intra-net/Pacnet service. This enables large or small companies to have a network of communications terminals in all branches throughout the world without the need for expensive leased lines or mainframe equipment.

Pacificnet, 6th floor, 3 Bowen Crescent, Melbourne, Vic, 3004. Tel: (03) 267 4044.

PHILIPS TELECOMMUNICATION AND DATA SYSTEMS LTD *STAND 13*

PHILIPS is launching its Sopho-S digital PABXs, including the Sopho-S 100 and the Sopho-S 250, which range from 20 up to 20,000 extensions. The company describes the Sopho range as having a future-proof architecture, extensive networking capabilities, strong family concept throughout the range, high reliability and strict adherence to the CCITT international standards. Philips is also releasing for the first time in Australia its complete telephone, terminal and peripheral ranges, from basic 2-wire analogue handsets to fully integrated voice and data terminals. On show are the Sopho-Set 110 series of telephones, the Sopho-Set K series of system integral terminals, the Sopho-Set 308 series of digital handsets, TMS modular (telephone management system) on a range of Philips computers, LAM 308 data modules. Another new release, which extends the Philips range of small business systems, is the Series II SBXs (small business exchange), the SBX-18 and SBX-42. Both new models have the latest surface mount technology and are capable of driving operator consoles as well as a range of slimline key touch terminals.

PHILIPS

Philips Telecommunication and Data Systems Ltd, 25 Paul Street North, North Ryde, NSW 2113. Tel: (02) 602 2000.

PLESSEY AUSTRLIA PTY LTD *STAND 73*

PLESSEY Australia Telecommunications Division supplies a full range of private automatic branch exchanges (PABX) for small and large companies alike. These PABX systems employ digital microelectronics exploiting advanced technologies in digital transmission microprocessor functions and telecommunications techniques, The Plessey ISDX digital exchange range of systems incorporate full compatibility with public and private ISDN as well as future networks and services, voice, data and text compatibility, and feature transparency across networks. The division also markets a wide range of portable, rack mountable VHF and UHF mobile radio equipment for field communications and desk station transceivers, mobile data terminals allowing constant real-time communications and pre-arranged access to databases, as well as digital microwave radio communications systems for voice and data. Plessey represents OKI Electric Industry Co Ltd, Tokyo, Mobile Data International Inc, Vancouver, Dynamic Sciences Lty, Vancouver, and Glenayse Electric Ltd, Vancouver.

Plessey Australia Pty Ltd, Faraday Park, Railway Road, Meadowbank, NSW, 2114. Tel: (02) 807 0121

Atug'88

QPSX COMMUNICATIONS PTY LTD *STAND 34*

QPSX and Telecom will be demonstrating at Atug '88 QSPX's new fast packet- switching technology based on a dual bus architecture which provides integrated packet and circuit switching. Telecom, a 60-per cent partner in QSPX, has undertaken to implement a pilot network using QPSX (Queued Packet Synchronous Switch), developed by QPSX Communications Pty Ltd. The Western Australian based company is providing Telecom with hardware, software and support for the pilot network, a prelude to commercial services, which are planned to be launched in early 1990. The technology has been selected by the Institute of Electrical and Electronic Engineers for development as the standard Metropolitan Area Network (MAN). It will be known as the IEEE 802.6 MAN, and it is this concept that will be highlighted at Atug. Services derived from QPSX MAN's include private and public data networking (Lan interconnection over long distances with Lan performance), high speed imaging, ultra high speed data applications, and access integration.

QPSX, 10 Stirling Highway, Nedlands, WA 6009. Tel: (09) 389 1666

SCITEC

SCITEC COMMUNICATIONS SYSTEMS LTD *STAND 9*

THE company is displaying its comprehensive range of data communications products, including the Maxima integrated backbone network system with its integrated synchronous/asynchronous data and voice handling and network management software. It is described as a highly sophisticated resource manager with advanced self healing capabilities under error conditions, including trunk and component failure. This product uses TDM technology as its basis to ensure transparency to all protocols used by different computers to allow cost effective voice communications in-

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Communications For
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Why projects fail

By Walter Ulrich

THE network manager must be an agent of change. Changing business conditions, a fluid economic environment and rapid technological evolution continually force the network manager to take bold initiatives and upgrade existing systems.

Strong user support is required when undertaking networking projects or performing significant system upgrades. Unfortunately, network initiatives often fail for lack of user support, and more than a few network managers have failed because they alienated the user.

What is the basis for these failures? Network managers are like other technical managers in the engineering and scientific communities. Their education focuses on precise formulas and a broad base of facts. They are rewarded for a disciplined analysis that arrives at a precise answer — accurate to seven decimal places. They are rewarded for technical excellence and steeped in a special jargon.

Once technically trained people become managers, they must master a new set of skills. Their technical skills serve them well for evaluating technical staff and technology alternatives. Unfortunately, those technical skills can lead a manager to make one or more of the three biggest mistakes that can be made when trying to promote a new project to users and upper management.

Mistake No 1 is to think that if it makes technical sense, it makes business sense. Nothing could be further from the truth. Business decisions are and should be made based on a careful balance of a wide range of factors The intangibles are often far more important than the tangibles.

Often, technical managers exhibit their failure to understand the fine nuances of decision-making when they say: "That decision was made based on politics." In healthy companies, spirited debates ensure that all sides of an issue are presented. The communications manager must understand the complex, difficult and sometimes trying mechanisms that form the basis for the decision-making process.

The second big mistake that technical managers make is neglecting, and therefore losing, their audience. When a new project is being proposed, many interested parties must be convinced. Each has its own focus. Administrative people want to know what is going to change, how much and what they can do to make that change easy. Marketing people want to know how to sell more goods or services to the customer. The production people want to know what bottlenecks will be removed. Bottom-line managers want to know what the impact is on profits, the income statement and the balance sheet. A lengthy technical recitation is sure to lose interest and undermine credibility.

The third big mistake that technical managers make is becoming defensive. In engineering, there are right answers and wrong answers and nothing in the middle. In business, there are almost never right or wrong answers. Questions are usually simply requests for additional information, not attacks on the project being proposed.

Never jam a new project down the throats of users or management. Start by developing a sound business case. Consider all interested parties. Ask for their input and listen to their ideas.

Once the project is finalised, document it carefully. Then take the project plan back to all interested parties and tell them in plain English how it addresses their concerns and meets their requirements.

Initiatives with a wide internal constituency get rapid executive approval and strong user support. Without that support, a great technical project is doomed. With user support, a moderate technical program can be turned into a smashing business success.

- *Walter Ulrich is with Coopers & Lybrand.*

tegration. Maxima allows corporations to integrate all communications into a private ISDN network. Scitec is also demonstrating the MDX 5000 family of networking products which feature enhanced network management facilities and the new intelligent TDM processor card. ***Scitec Communication Systems Ltd, 3 Apollo Place, Lane Cove, NSW. 2066. Tel: (02) 428-9555.***

SHUTTLE DATACOM PTY LTD *STAND 90*

THE Shuttle group of companies will exhibit its latest range of equipment designed to meet the complex demands of corporate connectivity. A feature of the display will be the Shuttle Wiring Management System, which uses cheap twisted-pair wiring instead of coax, or fibre optic cable to produce a wiring scheme for single-floor office to a multi-storey building with maximum cost efficiency. The company will also exhibit its array of modems with particular emphasis on the intelligent Data Race high-speed modems. The Race 11 includes an independent, statistically multiplexed printer channel that is able to support either serial or Centronics connected printers. Also on display will be the CX 80 Data Exchange, a multi-function data communications processor designed to provide users of many popular display terminals, teleprinters, and personal computers with convenient, economical access to a wide variety of computing communications facilities.

Shuttle Datacomm Pty Ltd, 46 Belvedere Road, Seaford, Vic, 3198. Tel: (03) 786 4446

SIGTEC — SIGNALING TECHNOLOGY PTY LTD *STAND 105*

SIGTEC is an Australian owned company engaged in the design, manufacture and marketing of mobile radio and line signalling products and systems. Product applications include automatic number identification, selective calling, sub-audible signalling and computer-aided fleet management and despatch systems. Operational demonstrations of most of the above mentioned applications are be on display at the show. Sigtec is also making the world first release of a miniature CMOS Selcall module. This product has been designed specifically for portable two-way radio requirements where available space and power is restricted.
Sigtec — Signaling Technology Pty Ltd, 2 Apsley Place, Seaford, Vic, 3198. Tel: (03) 786 0077.

SVT VIDEO SYSTEMS PTY LIMITED *STAND 12*

SVT offers videoconference products and systems ranging from fully customised video meeting rooms and mobile videoconference terminals to desktop units for single user applications. On show is the company's videocon-

(Continued page 40)

IBM shows first ISDN interface

By Josh Gonze

HANOVER, West Germany — IBM used CeBit '88 here to show its first ISDN interfaces for computers and PABXs, and to demonstrate several other ISDN prototype and OS products.

The products, displayed to some 400,000 show attendees, highlighted IBM's readiness to support international standards but also showed that its efforts to support the OSI network model and ISDN standards are further along in Europe than in the US.

The new IBM ISDN interface, the 7820, is a standalone box that runs its own software and supports the ISDN Basic Rate Interface on the network side and X.21, V.34 and V.35 interfaces on the computer side.

Computers can access one or both of the 64K-bit/sec digital B channels within the 2B+D Basic Rate Interface. The 16K bit/sec. D channel is used for signalling. The 7820 is strictly an ISDN computer interface and does not provide for voice support.

The device is only an interim design and will be sold only in West Germany and will eventually be superseded by boardlevel adapters for different IBM processors. Pricing will be determined once ISDN services have become commercially available in West Germany in the first quarter of next year.

IBM also used its recently introduced 8750 PABX — the European equivalent of the IBM/Rolm 975-1 — to demonstrate its ability to integrate voice and data at the desktop and transmit the multiplexed circuit to a central office via ISD circuits

Voice/data pilot

The pilot involved two ISDN cards in the 8750, physically identical but running different software. One card, a PABX line card, supported a single Rolmphone with an integrated data jack connected to an IBM PS/2 Model 30. A trunk-side PABX card supported a single point-to-point Basic Rate Interface that stretched almost 600km to a central office in Mannheim, West Germany.

A similar demonstration is scheduled later this year in Norway to test the 8750's ability to support the European ISDN Primary Rate Interface standard.

A second prototype product demonstrated was a program that allows a transaction-processing application to run in both SNA and OSI network environments. The demonstration involved a PC AT running a simple time-telling application — the transaction-processing application — and the new interface software.

(Continued page 40)

Which of these receptionists will enjoy coming to work for the rest of her life?

C&C Computers and Communications

It won't be the one with the most comfortable seat. Or the most relaxing office wall colours. Or even the one with the highest salary package.

It will be the one with the most helpful PABX. Now, and in the future. And, in our obviously unbiased opinion, that means an NEC PABX.

It's also the opinion of receptionists all over Australia. They're not dazzled by techno talk. Their interest is efficiency, reliability and ease of use. The everyday functions of their PABX. And, in particular, the way their PABX suits their organisation's requirements.

This is where an NEC PABX comes into its own. And one major reason why thirteen out of Australia's top twenty companies have already installed one. Every NEC PABX is designed to fit the needs of its place of work like a glove. No matter what size, what business, or how awkward those needs may be. An NEC PABX is modular and can grow (or heaven forbid, shrink) with your company. What it can't do is become obsolete.

Every innovation in PABX technology (and NEC leads the world in PABX systems) is easily adaptable to existing NEC PABX installations. Out comes the old module and in goes the new.

It's a system which means that your NEC PABX will go on working reliably, efficiently, and at the peak of PABX performance forever.

Adapting to any advances in technology. Or to the needs of your business. And, of course, to the needs of your receptionist.

For more information on NEC PABX call (008) 33 8120 or an NEC office listed below.

Sydney (02) 436 8111.
Melbourne (03) 267 5599.
Brisbane (07) 252 8800.
Adelaide (08) 373 2022.
Perth (09) 325 2155.

NEC
P A B X
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ATUG '88

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ference terminal (VCT), a self contained package comprising cabinet with color cameras and monitors, video switching, sound system and microprocessor controller. Other exhibits include video codecs operating at 64kBPS to 2MBPS and SVT'S broadband LAN reticulation scheme for distribution of video, voice and data over distances up to 5km.

SVT Video Systems Pty Limited, Unit 1, 33 Ryde Road, Pymble, NSW, 2073. Tel: (02) 498 6386

TELEBROKERS *STAND 67*

TELEBROKERS buys and trades in on a national basis virtually all makes and models of PABX and Commander telephone systems. Telebrokers services businesses with redundant, excess or superceeded equipment, consultants wishing to assist clients in the disposal of redundant equipment and PABX suppliers needing to trade in customers' existing equipment to expedite new sales. Telebrokers buys equipment in "as is, where is" condition, or in operational condition, disconnection, packing and transportation if required. Telebrokers buys all brands, all sizes from all locations.

Telebrokers, Unit 7, 43 Herbert Street, Artarmon, NSW, 2067. Tel: (02) 436 4333

Telecom Australia

TELECOM AUSTRALIA *STAND 93*

TELECOM Australia has a large display covering vital elements of telecommunications including optical fibre technology, its telemarketing program, the MobilNet cellular phone service and text services including teletex. Telecom also introduces its new Cardphone. A feature of the Telecom stand is the display that was developed for the 5th World Communications Forum held in Geneva in October, 1987. A highlight of Telecom's involvement this year is a graphic depiction of the rapidly growing optical fibre network which is progressing ahead of schedule.

Telecom Australia, 10th Floor, 35 Collins Street, Melbourne, Vic, 3000. Tel: (03) 657 3177

TELECOST PTY LTD *STAND 32*

NEW products at the Telecost display include Call Manager is an advanced call accounting system with specified traffic analysis and fault reporting, and Fax Express, a fully automatic document retrieval system that uses Voice Mail prompts to guide the caller and DTMF to select the required document, which can be sent to any facsimile machine. In addition two Voice Mail systems will be demonstrated, the PC-based Voice Mail 470 and the smaller RSVP system. Totally new is the TIMS PC card. This allows any PC (IBM compatible) to have a full call accounting facility by adding the card which can store up to 30,000 calls. It still keeps collecting data when the PC is turned off.

TELECOST PTY. LTD.

Telecost Pty Ltd, 486 Whitehorse Road, Surrey Hills, Vic, 3127. Tel: (03) 836 0322

Atug'88

TELECTRAL COMMUNICATIONS SYSTEMS PTY LTD *STAND 66*

Telectral Communication Systems Pty Ltd, 18-19 Horne Street, Elsternwick. Vic, 3185. Tel: (03) 523 6544

THE TELEPHONE SUPPLY COMPANY PTY LTD *STAND 39*

THE Telephone Supply Company announces the Accent SBX telephone system by Philips, said to be tailor-made for the small/medium sized business — even for those who work from home. Available in four models the SBX will handle varied configurations of incoming lines and extensions. Described as extremely compact, the Accent reportedly offers functions previously found only in much larger systems. The company also markets a large range of telephones and terminal equipment including executive multi-featured phones, the Callmaster range of replacement handsets, answering machines and cordless telephones. The Telephone Supply Company, with offices in Sydney, Melbourne and Brisbane, holds an unrestricted cabling licence for block and reticulation cabling in all types of PABX.

The Telephone Supply Company Pty Ltd, 33-35 Alleyne Street, Chatswood, NSW. 2067. Tel: (02) 635 6466

TYTEL

TYTEL PTY LTD *STAND 36*

TYTEL, claiming to be the only Australian company designing and manufacturing telephone systems and telephones for business use, will unveil the 800 Series LANX telephone system, and display the design award-winning 700 Series executive telephones. The Tytel LANX (Local Area Network Exchange), is said to be the first small business, digital switching system based on a fully distributed architecture. it is described as fully modular, capable of being expanded from two exchange lines with two extensions, to 16 exchange lines and up to 80 extensions.

Tytel Pty Ltd, 74 Whiting Street, Artarmon, NSW, 2064. Tel: (02) 439 4499

voca

VOCA COMMUNICATIONS PTY LTD *STAND 42*

THE company markets a range of facsimile machines, answering systems, sequencers, auto dial phones and videotext equipment. New products include the F20 and F30 facsimile units, Kiss 10 PC board fax and VM2000 and BC 40 cellular telephones.

Voca Communications Pty Ltd, 11 Eastern Road, South Melbourne, Vic, 3205. Tel: (03) 697 7000

VOICECALL COMMUNICATIONS PTY LTD *STAND 57*

VOICECALL Communications Pty Ltd, established in 1981, describes itself as a pioneer of the private radio common carrier industry in Australia. The company provides a variety of paging products (principally tone only, numeric and alphanumeric pagers) and other related services. It lays claim to being a market leader in alphanumeric paging, i.e., the transmission of display messages to subscribers' pagers on a small liquid crystal screen. Voicecall has developed its own computerised message handling system and a personal answering service which operates 24 hours per day, 7 days a week transmitting messages via satellite Australia-wide.

Voicecall Communications Pty Ltd, Level 3, 222 Kingsway, South Melbourne, Vic, 3205. Tel: (03) 690 8055.

Wandel & Goltermann
Electronic Measurement Technology

WANDEL & GOLTERMAN PTY LTD *STAND 5*

THE West German test equipment specialist this year will feature a large number of new products, including the DA-20 portable data analyser with monitor, simulator, emulator and statistical functions capable of measuring up to 256k-bit/sec data streams. Available with ISDN S0 interface, it has internal 512K-byte memory, mass storage of 45M-bytes and allows easy programming and protocol modification is on display. The DPA-10 is billed as a complete diagnostic/measurement/ surveillance tool for use in determining SNA/SDLC network performance and fault localisation. It measures response time and identifies causes in simple tabular and graphical terms. Due to extensive diagnostics it is said to be the ideal companion for NetView users. Also on display are the DT-10 Pocket Data Tester, the DLM-4 Data Line Test Set, DF-65 and PF-2 Ber Test Sets and MK-4, a full range of hand held instruments for audio, datacoms and optical measurements.

Wandel & Golterman Pty Ltd, 42 Clarendon Street, South Melbourne, Vic, 3205. Tel: (03) 690 6700

IBM shows ISDN interface

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A PS/2 Model 80 supporting an SNA link to the PC AT could request the time and display the sequence of SNA protocols required for the transaction to be processed. Another Model 80 with an OSI link to the same Personal Computer AT could also request the time, displaying the sequence of OSI protocols required to achieve the same result.

Although still a prototype, IBM said the program is compliant with its Systems Application Architecture (SAA). SAA is intended to enable IBM and users to develop applications that run on a range of different processors.

The demonstration was particularly well-timed because a working group of the International Standards Organisation at the same time bestowed "draft proposal" status on a proposed standard for transaction processing.

The third prototype demonstrated was a software package that maps OSI protocols to ISDN protocols, a capability that would enable OSI data networks to interconnect via ISDN telecommunications facilities.

In the demonstration, two 9370 minicomputers transmitted electronic mail messages formatted in compliance with X.400 via an ISDN telecommunications link.

At the physical layer, the lowest level in communications, ISDN and OSI are compatible, so the mapping program becomes superfluous.

VOX
VOICE OUTPUT EXCHANGE

GONE TO LUNCH!

When Mr. Bell invented the te

Human beings. He forgot that they eat lunch, go to the bathroom, attend meetings, visit clients and sometimes even knock off at 5.30. That's why only 25% of first phone calls actually connect. That first connection which could be vital to the ongoing efficiency of your business.

Honeywell VOX takes up where Mr. Bell left off. It turns that sorry 25% or 1 in 4 hit ratio into a slick 100%, using nothing more than the buttons on the telephone. And like the telephone before it, it's totally revolutionising office communications throughout the business world.

Honeywell ensures that even when employees are out of the office they can receive and respond to that vital first call. Instead of the standard "please call back", they get a complete message, up to five minutes long, in the caller's own voice.

Non simultaneous messages can be sent, received,

FOXY 1287

On the hustings . . .

By Ron Lyth

MORE than any other country, Australia relies on communications to ensure the cohesiveness of a highly-urbanised country with vast distances and very few people. Because of our demography, we must be extremely careful in applying the lessons learned overseas to our communications problems.

There is a need for a unified bi-partisan agreement on the future development of our telecommunications system, and this need grows daily more pressing as the world advances into an information economy. Some have said that we in Australia have missed the boat with this third wave of industrialisation, but while we have left our run late in the day, there is still time if we make a concerted effort now.

The essential questions which must be addressed are:

- How is Australia's international competitiveness to be enhanced by communications technologies and policies?
- How is the necessary investment to be met?
- Who will own what, and who will pay for it?
- How can we get from here to there?

It is of more than passing interest to comment that these questions have very little to do with engineering, which is the discipline dominating the current decision-makers in the industry. Australia does not need another engineering fix, but rather we need people with much broader outlooks. The classical problem-oriented thinking practised by engineers should really be left as a last resort, and invoked only after having proved that there really is a problem. There often is not.

After the urban-rural divide of vested interest, the major division is that between business and domestic users. The range of services demanded by business users is wide and tests the technical competence of all involved to a high level. This demand will continue to be the key factor promoting technological advance, and will demand a correspondingly high investment in network infrastructure.

At the same time, domestic users comprise 80 per cent of all telephone users, and use mostly unsophisticated technology at a comparatively low level of usage. There is no way that the heavy investment in new technology required by the business community can be justified for this group, and neither will they derive much from it either the short or medium term.

> ‘ Long-haul telecommunications in Australia is over-priced and subsidises short-haul users ’

At present, domestic users do not contribute sufficient revenue to cover the costs of their telephone usage, and there is an element of subsidy from the business segment. The timed local calls "debate" recently in the news is only a symptom of what we can expect as other elements of the existing structure come under scrutiny.

Then there is the conflict of interests between short-distance and long-distance telecommunications users. Although not as bitter as some of the other divisions, this conflict is potentially the most significant for the long-term competitiveness of the Australian community.

Long-haul telecommunications in Australia is over-priced and subsidises short-haul users, especially those making local telephone calls. Even Telecom acknowledges that, with everything possible loaded on to the cost side, the Sydney-Melbourne STD route pays for itself in two months and the remaining 10 months of each year generate cross-subsidy.

This must be cause for disquiet because if that revenue were lost to Telecom, other costs would have to rise massively and quickly, and that is a matter of economics which no technology tinkering can avoid.

The needs of the community can also be split on the basis of those who need basic services, such as telephone calls, and those who want enhanced services. The cost of providing basic services is not excessive while enhanced services generally cost a lot, especially during the initial stages.

The difficulty facing decision-makers in this area is that today's enhanced service becomes tomorrow's basic service, and shifts of this nature can act to the detriment of any organisation which is prohibited from competing in all areas. This point has particular relevance for those who would restrict a public carrier such as Telecom from competing for enhanced services while granting a monopoly in basic services. As the basic services at the time of the grant decrease as a share of the total market, the result is the ultimate demise of the carrier

There is a substantial correlation between business users and the users of enhanced services on the one hand and between the users of basic services and the domestic market on the other. This correlation will continue but will decline over time as more sophisticated services become more common in private homes.

The final set of conflicts concerns the basic decision between what the community accepts as being rightly the province of private and public enterprise. Here we have difficulty in translating the overseas experience. The US has a highly-regulated private enterprise system with a multiplicity of carriers, while West Germany has a very heavy-handed Bundespost which makes the worst excesses of Telecom, however objectionable, seem quite reasonable by comparison.

Somewhere between these two extremes there is a happy medium which is almost certainly different for each country and culture. In fact, cultural forces are likely to have much more relevance in this argument than economic or political ideas. There is a strong cultural inclination in Australia for big schemes with long lead times to be passed to governments. It is mainly multinationals which have initiated the big private projects here.

The key factor which must be considered in the Australian equation is: What is to be the role of Telecom Australia and, to a lesser degree, of OTC and Aussat? Here is the crux of the whole argument; Telecom probably has less political independence now than it had when it was part of the PMG's department. Any unpopular decision by Telecom causes the full brunt of political malice to fall on the organisation, while the politicians take full and complete credit for any positive achievement.

Essential reforms

We must act to develop a three-tier approach to telecommunications. At the top we must have a permanent bi-partisan policy formulation committee made up of independent people and with a small specialist research group. The policies developed by this committee, being bi-partisan, would be adopted by the government of the day and given effect by such bodies as the Department of Communications, and an independent regulatory body to be established.

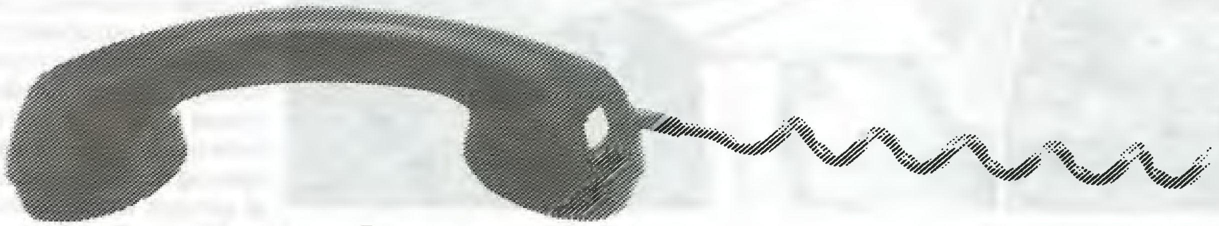
This is the first and most necessary step in the process of de-politicising Telecom, and many of the essential reforms would fail if this were not done. At the second level matters such as tariff-setting, authority to connect, and the licensing of other service providers, should then be referred to independent bodies along the lines of the British Oftel or the US FCC.

The goal must be to provide Telecom and other carriers, which together comprise the third level, with the ability to introduce the necessary reforms required without the fear of being blown out of the water by nervous back-benchers in one or other of our parliaments.

Given that Telecom could set its house in order and adjust its prices to something more closely approximating the cost of provision, there is no reason in the world why others should not be allowed to compete, provided that such competition is fair. Where cross-subsidies occur, they should be overt, fully justified and explained, and all competitors on profitable routes should pay the subsidy.

Telecom is vulnerable to competition because there are only a few routes which generate profit, and they are easily identified. The obvious candidate is the Melbourne-Sydney route, and there is really a super-route connecting Brisbane, the Gold Coast, Newcastle, Sydney, Canberra, Melbourne, Geelong and Adelaide, which would generate all Telecom's cross-subsidy and profit. The rest of the network as a whole runs at a loss.

(Continued page 42)



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On the hustings

(Continued from page 41)

Any competitor looking for opportunities would be interested in this super-route and little else, and could offer substantial savings to users. The resulting loss of revenue would lead to the need for massive increases in the costs of other services, which in turn would open yet more routes to competitive thrusts. The result would be Telecom left with the unprofitable part of the business, charging high prices for that, or being a net drain on the public purse.

Therefore we must make some key decisions concerning:

- The extent of cross-subsidy we want in our network;
- the nature of any competition to Telecom;
- who should regulate the industry; and
- how we can incorporate emerging technologies into this framework. It is my contention that the existing environment is ill-equipped to even consider such questions, let along provide answers.

Call charges now subsidise the telephone rental. It is alleged that each equipped telephone line in Australia represents capital expenditure of about $A2000. Allowing for interest at 13 per cent and depreciating this capital over 20 years, we need $A360 a year to cover those costs alone. Domestic rentals are less than half that figure and we have not made any allowance for maintenance, contribution or profit. The difference must come from call charges, and insofar as domestic users make fewer calls than business users, there is a substantial cross-subsidy from business users to domestic users.

The major source of the cross-subsidy is the business user making long-distance calls, and these users subsidise rural areas and urban local call users. It is precisely these users who are the most powerful and who have the resources and possibly the will to set up an opposition to Telecom. To allow competition on the east-coast route without regulation and a cross-subsidy surcharge would be extremely harmful to Australia's long-term interests and indeed to the organisations which would derive most benefit in the short-to-medium term.

Possible scenarios

What, then, are the options open to our political masters in establishing the framework for Australia's telecommunications future?

The first scenario I will name is "steady as she goes". It has the advantage that it costs nothing in the short-term, and would satisfy the great Australian desire not to be bothered.

In the medium term there would be some real problems as the cost imbalances in the existing system become magnified, and there could be real cases where the cost imbalances create demand imbalances in a positive feedback loop. Such a scenario will, in the long-term, result in massive changes being forced on to the industry and the longer they are deferred the more savage and unpopular the resulting changes will be.

The difference between Australia's performance and that of our neighbors and competitors who have long-term plans would not be palatable to any political grouping.

The economic gurus claim that the only fair pricing system in the long run is the "user pays" principle.

There has been some argument that we should use cost accounting except for certain areas in which limited cross-subsidies should be retained. This has found greatest support from Labor members from marginal outer-suburban electorates and it is not altogether unexpected that the proposed residual subsidy should happen to be most beneficial to their electorates. Unfortunately, as long as the extent of such subsidies is not quantified, there is no opportunity for the rest of the community to see how much these practices are costing.

My position lies somewhere in the middle. I firmly believe that Australia's interests are best served by having uniform and universal telecommunications. Because of this I am committed to supporting some cross-subsidy, but not in the covert manner now practised.

> *'Where cross-subsidies occur, they should be overt, fully justified and explained'*

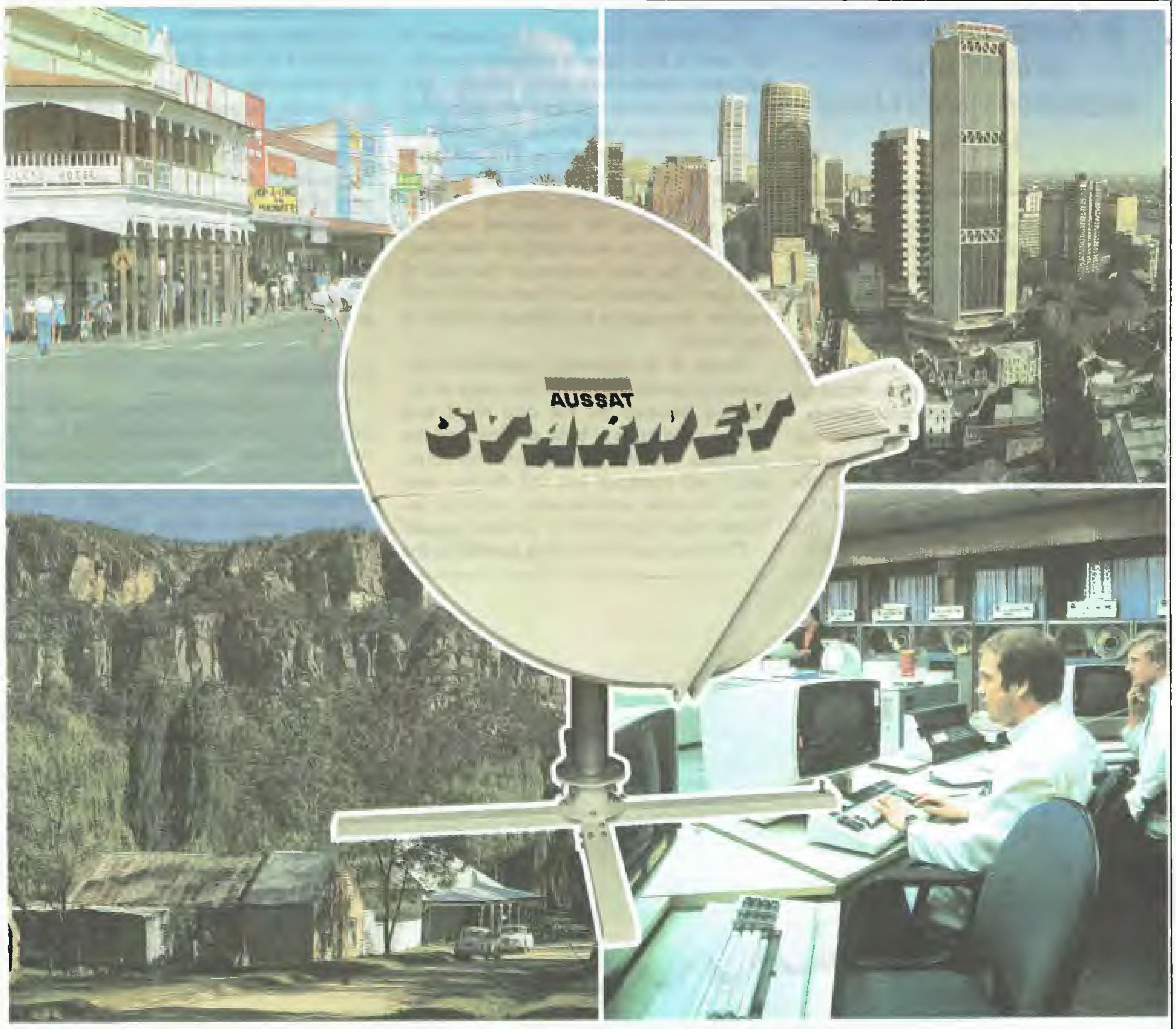
My recommendation is that we adopt explicit subsidies which are clearly identified by source, destination and amount. Such subsidies might come from specific government funding such as the rental subsidy for pensioners paid by Social Security and Veterans' Affairs, or they could be levied as a surcharge on all users of the services designated as the source.

This would allow competition on the major routes, because all service providers on those routes would contribute to a central account out of which the services to be subsidised would be funded. We would encourage the best features of the existing system with its socially desirable goals of universal service at a standard cost, while opening up the market for the introduction of services which Telecom would not or could not offer effectively.

There are strong arguments for retention of Telecom as an Australian-owned public enterprise, and for it to maintain its role of providing universal uniform service. There are also strong arguments for allowing competition, but such competition must be established in an orderly and fair manner.

These are hard decisions and will not be popular with many sectors of our community which seem to be afflicted with a belief that the rest of the world owes them a living. But the stakes are much higher and concern our ability to survive and thrive in the information age. There is no sense in developing policies concerning information if the underlying structure for its dissemination is flawed or non-existent.

● Ron Lyth is a private consultant and Victorian State secretary of Atug. He stresses that the opinions expressed are his personal opinions and do not reflect the stated position of any organisation with which he is involved.



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Telecom seeks 'future-proof' network

By Luis Huesch

SYDNEY — Increasing demand for X.25 carrier services from private network and value-added operators such as Tran$end remarketers and videotex service vendors is far from straining Telecom's existing Austpac network.

The commission's decision in the next few months on the replacement Austpac Mark II will therefore be of more than passing interest for both suppliers and users.

Telecom is still evaluating the massive tender documents it received last year from network vendors such as Alcatel STC, AWA-Nortel (Northern Telecom), Honeywell Bull, LM Ericsson, NEC, Plessey (Telenet) and Siemens, and remains tight-lipped on most aspects of the tender.

Port numbers are estimated to range from a conservative 20,000 up to 50,000 over the duration of the contract and total value is said to be $A30 to $A50 million.

But these details in particular, remain closely guarded. A Telecom spokesman merely said the commission was looking at a cost in the "tens of millions" of dollars.

The insider's betting is Alcatel STC making the race, with AWA Nortel a "dark horse" contender.

Informed sources said a decision was expected in the next month or two. Telecom maintains that the in-service date of late 1989 has not changed.

Sources said the evaluation process was lengthy because Telecom was looking not simply for a replacement system, but for a "future-proof" network architecture that permits expansion of the second-generation system well into the 1990s.

The tender specifications reportedly required suppliers to show how the equipment tendered will allow the network to grow at economically viable cost over the eight or more years of its expected life cycle.

Some smaller suppliers of X.25 equipment are thought to have had difficulty proving this capability.

But one of the several bidders that dropped out of the costly tendering process — Tymnet, for instance, is alleged to have spent some $A250,000 before calling it quits — claimed that Telecom's expectations were "unrealistic" in view of present Austpac demand.

Another contender said there was "a fair stack of under-utilised capacity" now on Austpac, which offers some 7000 ports at present. According to this bidder Telecom, in addition to the overall network specification, asked for what amounted to "a price catalogue" for equipment that might be needed for expanding the new systems.

According to Telecom, present Austpac capacity still allows the service "to grow" for the remainder of this year and next year until the new equipment is installed, starting with perhaps 6000 ports.

Both systems will be run in parallel initially, with new demand being switched through the new Austpac network. Existing customers who want access to CCITT 1984-standard facilities not now offered on Austpac could also be transferred to the new network.

The Telecom spokesman said the important objective was not so much the number of ports available on Austpac II on Day One, but having the network infrastructure in place.

Latins switching to data packets

SUNRISE, Florida — The data communications agency of Costa Rica, Radiografica Costarricense SA (RACSA), recently inaugurated the first public data packet-switching technology in Central America in the capital city of San Jose. The packet-switching system was manufactured by Siemens, and modems provided by Racal-Milgo Intercontinental, based here.

The Costa Rican installation is expected to set the communications trend in Central America with CCITT X.25 packet-switching.

The service is expected to reduce routine telex costs for many business users, including such features as store-and-forward capability that lets users prepare messages during the day and hold them until lower rates take effect. The network also can communicate with packet-switching systems in Europe, Britain and the US.

A similar contract is now being negotiated to start packet network construction in Colombia. Colombia's post and telephone agency, Telecom, also contracted with Siemens to instal its packetswitching network and with RacalMilgo to provide modems for the Colombian installation, expected to be inaugurated in June. Sales of the Racal-Milgo modem equipment for the Costa Rican and Colombian projects total around $US1.4 million, consisting primarily of RM-9629 9.6K- bit/sec and RM-4800 4.8K-bit/sec modems.

Northern wins big Swedish contract

PARIS — The Swedish PTT, Televerket, has selected Northern Telecom to supply high-speed data switching systems for its nationwide packet data transmission network.

The long-term supply agreement includes orders valued at $CN17 million, covering deliveries during the first two years. The new equipment will allow an expected tenfold increase in data traffic over the next seven years. The Televerket contract represents the first public network order for Northern Telecom's new DPN-100 packet switching system. According to the vendor the system can handle 10 times the traffic volume of any packet switch currently in service from Northern Telecom or from other suppliers. The supply agreement foresees continued growth of the network based on DPN-100 systems, and Northern expects there will be 40,000 lines in service by 1995, each providing multiple access for data users.

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Exchange banks on packet-switching

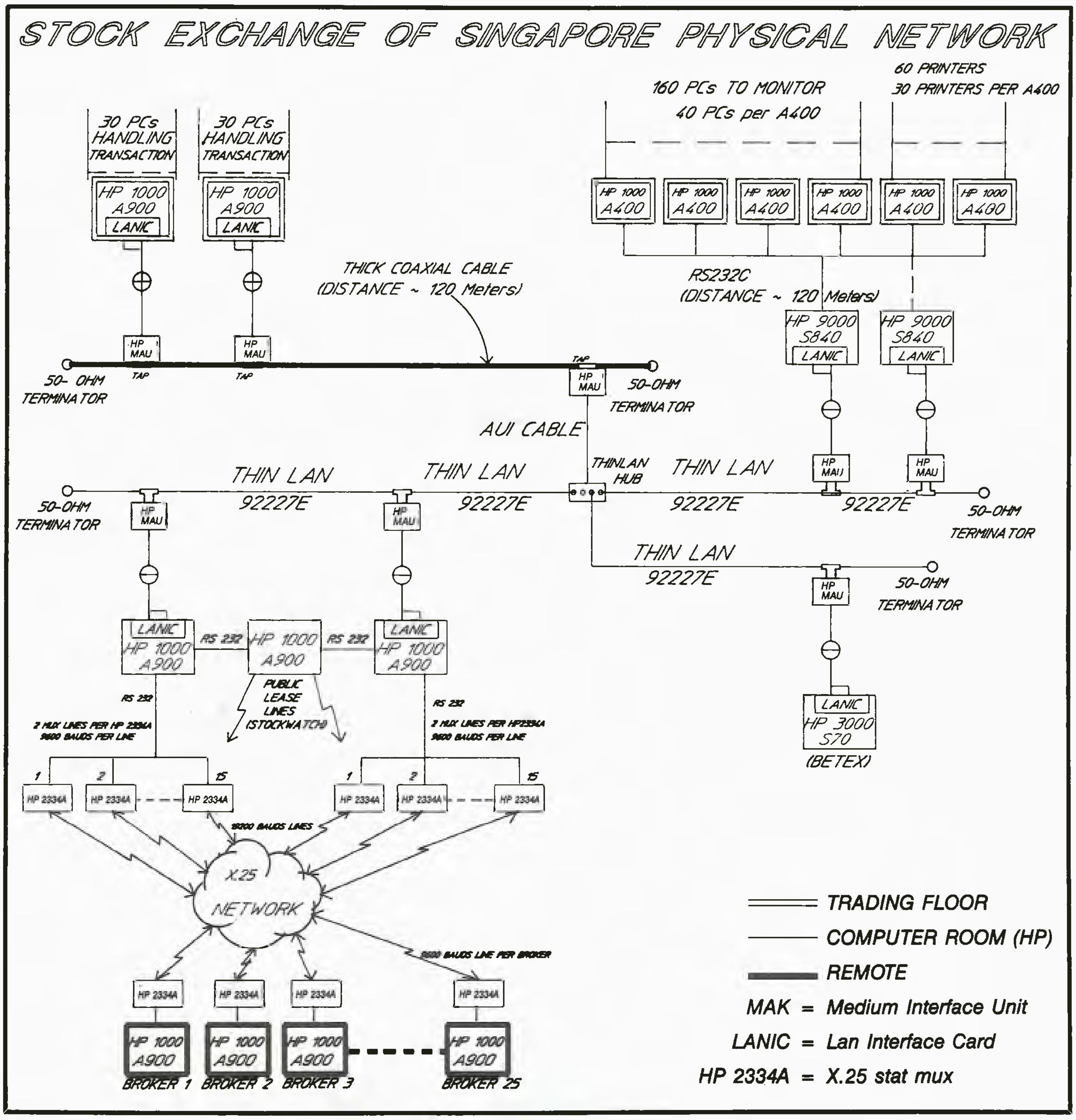
Singapore brokers to the 'nodes' on integrated network

SINGAPORE—The Singapore Stock Exchange, which moved some $A13 million worth of computer and communications equipment to new premises recently, is banking on packet-switching to put its operations among the most efficient in the world.

The SSE aims to make a single X.25 network integrating three existing networks the backbone for all transactions involving the exchange. It has already tied its local-area networks together with an innovative common cabling system using eight-wire twisted pair cable.

Next month, a wide-area packet-switching network is expected to bring 25 Singapore broking companies online to the exchange with an order routing and confirmation system and an "electronic order book" facility that supports automatic trading. Brokers will be able to send orders directly from PCs in their offices to the trading floor, being installed this month.

The network, designed and supplied by Hewlett-Packard's local networking subsidiary, is believed to be the first private X.25 net in Singapore. It ties the brokers' existing HP A900 minicomputers to a pair of HP9000 S840 CPUs at the exchange which in turn are linked by a local-area network and can monitor and back up each other (see diagram). Each broker will essentially become a node on the network, according to the exchange's DP manager, Paul Phillips.



STOCK EXCHANGE OF SINGAPORE PHYSICAL NETWORK
30 PCs HANDLING TRANSACTION
30 PCs HANDLING TRANSACTION
HP 1000 A900
LANIC
160 PCs TO MONITOR
40 PCs per A400
60 PRINTERS
30 PRINTERS PER A400
HP 1000 A400
THICK COAXIAL CABLE (DISTANCE ~ 120 Meters)
RS232C (DISTANCE ~ 120 Meters)
HP 9000 S840
HP MAU
TAP
50-OHM TERMINATOR
AUI CABLE
THINLAN HUB
THIN LAN 92227E
RS 232
PUBLIC LEASE LINES (STOCKWATCH)
2 MUX LINES PER HP 2334A 9600 BAUDS PER LINE
1
2
15
HP 2334A
19200 BAUDS LINES
X.25 NETWORK
9600 BAUDS LINE PER BROKER
HP 3000 S70
(BETEX)
BROKER 1
BROKER 2
BROKER 3
BROKER 25
TRADING FLOOR
COMPUTER ROOM (HP)
REMOTE
MAK = Medium Interface Unit
LANIC = Lan Interface Card
HP 2334A = X.25 stat mux

Concentrator

The brokers access the network through HP 2336A Pads via 9.6K-bit/sec lines. On the exchange side, 19.2K-bit/sec links support two mux lines per HP 2336A. A dedicated HP 900 will control the network through an HP X.25 concentrator. The mini monitors all activity on the network and reports faults. "In the event of a line failure, the network will dynamically find another path without interruption and report what is happening to the controller," said Phillips.

He said the X.25 network may eventually become a backbone system. The SSE is already experimenting with IBM's implementation of the X.25 technology, with a view to linking in the "backroom" IBM 3090 and NAS XL50 mainframes.

"We are operating three networks now," Phillips said. "These are the networks for main board trading and Sesdaq (SSE dealing and quotation system)—which will operate on the X.25 protocol — and the SNA network for the client accounting. The ideal is to integrate them all through the X.25 network. This provides for more flexibility and better use of resources."

The raised floor/common cabling system approach already provides a large degree of flexibility: Ungermann-Bass' Net/One Ethernet makes use of the twisted pair as does the host of IBM/PCM and HP equipment. All cables terminate in RJ45 sockets at the work positions, and are linked to patch blocks at each floor which connect them to a backbone coaxial Ethernet cable linking three floors. Baluns convert twisted pair and coax so that only one wire is taken to the patch panels. Signal conversion is carried out by U-B network interface units, which reconcile the differences in physical connections and software protocols to allow highspeed communications between the various hosts and terminals. All transmissions are multiplexed on to one channel.

Moving a terminal only requires modifying the patch block to reroute the connection. The SNA network linking the mainframes to brokers' terminals is also connected to patch panels, which furthermore permit monitoring of the entire network. A similar cabling scheme is used for the trading floor thin Ethernet Lan that links 27 in color monitors driven by a bank of HP 1000s, as well as some 60 PCs and 60 printers to the two HP 840s running under HP's Unix implementation, HP-UX. The PCs are linked by AT&T's Starlan.

The trading floor network is also linked to the outside world via 9.6K-bit/sec leased lines for services such as Stockwatch. A broadcast feed supplies Reuters, AP, Dow Jones, Telerate and other financial information services.

According to Phillips, the SSE is looking to supplement this services with a private videotex service through the local PTT's Viewdata system. An HP 3000 mini, linked to the SSE Lan by thin-wire Ethernet, is earmarked for this service, called Betex. Voice synthesiser-based phone quotation services and alphanumeric paging alerting investors when their pre-defined stock price limits have been reached are also under consideration.

Hybrid nets could be option

PRIVATE networks are often pitted conceptually against Integrated Services Digital Network environments, but they are not mutually exclusive.

Although ISDN presumes customers will come to rely on intelligence within the carrier network, users who prefer private networks will still be able to reap ISDN benefits by using customer premises equipment compatible with the standards.

It is possible, in some countries, that private ISDN networks could evolve more quickly than commercially available ISDN carrier services. Hybrid networks — part public ISDN and part private network — could also provide an attractive option for some companies, or a good migration path.

In concept, ISDN will enable customers to integrate multiple voice and data channels over the same carrier access trunk, and, once inside the carrier network, fan out these channels and individually route them.

The composite access trunks will include voice and data B, or bearer, channels, which are controlled by a D signalling channel.

The so-called "out-of-band" D signalling channel will enable customer premises equipment to configure the B channels on a call-by-call basis by interacting with carrier-based switches.

A channel used to carry voice one minute could be reconfigured the next to carry data to a different location.

However, corporations can build private ISDN networks by using ISDN-compatible customer premises equipment linked with clear-channel Mega link-type digital transmission facilities.

Private ISDN networks rely on the switching, routing and control intelligence of the customer premises equipment and do not require interaction on an intelligent basis with the public network. A company could, for example, build a network using PABXs that support the CCITT primary rate interface, which segments a clear channel facility into 30 B channels and one D channel. Networking the D channels of multiple "pipes" in this environment would provide the equivalent of a carrier-signalling network used to control network links.

60,000 terminal net aims to snare bulk of Euro travel

By their very nature, the international airlines' private networks are vast, far-flung — and costly to operate. It makes eminent sense to tie reservations systems together into global networks. And, as in Monopoly, the more "houses" you can stack together in a "street", the better are the chances of collecting. In this game, protagonists such as Amadeus and Galileo, as well as US-based Sabre, are stalking potential partners in Asia, Europe and South America. Amiel Kornel, of the IDG News Service European bureau, prepared this background paper on Amadeus.

PARIS — Amadeus, the networking initiative launched by major European airlines last year, plans to invest about $US300 million in its bid to conquer 70 per cent of Europe's air-travel reservation market by 1990. The bulk of the money will go to instal in Munich, West Germany, a control and communications centre that ties together some 60,000 terminals worldwide. Apart from the Munich centre, which Amadeus officials call Europe's largest computer facility, Amadeus will have a research and development centre near Nice, France. IBM, through its systems integration unit, is the principal contractor for the project.

The success of the computer reservation system is seen as crucial to maintaining the companies' competitiveness in a world of increasing deregulation. "Those airlines that understand from the beginning the need to set up a very strong distribution system are the most successful," said Curt Ekstrom, Amadeus president, during a recent interview here.

An effort to beat back the progress made in the European market by US reservation systems such as American Airline's Sabre, Amadeus was created in June 1987 by Air France, Spain's Iberia, West Germany's Lufthansa and Sweden's SAS. Together, the parent companies already cover 60 per cent of the European airline market, with 81.5 million passengers a year. They hope to raise their market share to 70 per cent by 1990. Taking into account the expected growth of the market, this translates into 135 million reservations a year.

Other members now include France's Air Inter, Sweden's Linjeflig, Finland's Finnair, Norway's Braathens-Safe and Yugoslavia's Jan and Adria Airways.

Ground content, too

Amadeus will furnish travel agencies with information about products, services, and the means for reserving airline tickets, hotel rooms, rental cars trains and ferries. In return, the airlines should benefit from better control of their seat allocation and accounting. (Some 70-90 per cent of airline bookings currently come through travel agencies, according to Ekstrom.) Of the initial investment, Ekstrom said, $US150 million will go for the procurement of hardware and software, while another $US130 million is earmarked for development work. He called the remaining $US20 million "a buffer".

For the Munich centre the consortium has signed an agreement with IBM to purchase nine 3090 Series E mainframes. Although financing has not yet been settled, according to Ekstrom, who was previously information systems director for SAS, a leasing arrangement is probable. The number of 3090s could double in coming years, he added. Three hundred IBM 3380 disk storage units have also been ordered. Applications software, running on the TPF transactional operating system, will be based on Texas Air's System One. Ekstrom denied reports that Amadeus paid $US100 million for the reservation system. About 100 specialists at the development centre in Nice are working on modifying the software to meet Amadeus' specifications. He said that more than 100 engineers from IBM and another 100 from Texas Air are also assigned to the project.

After an initial startup period of three to five years, Amadeus expects to continue spending an additional $US50 million per year for further development, Ekstrom said.

Development plans call for a system capable of handling 965 operations per second by 1990, with a subsequent annual growth rate of 22 per cent.

Headquartered in Madrid, the company plans to employ 550 people by 1990. The first travel agencies are to be connected by mid-1989. Break-even point is expected by 1990, and payback on investment for the project's founders should be reached by 1993.

The rate structure calls for a $US2 fee per reservation. During the payback period, this will be equally shared between the holding company and national marketing organisations run by the airline members. Subsequently, 75 per cent will stay in the hands of the airlines. Officials say the organisation will not be seeking a profit beyond the 5-7 per cent return-on-investment typical of European bank lending rates.

In addition to American's Sabre, Amadeus is facing competition from a rival European consortium led by British Airways, and including British Caledonian, Swissair, Italy's Alitalia, KLM of The Netherlands, Aer Lingus of Ireland, Austrian Airlines, Air Portugal and Belgium's Sabena. Called Galileo, the competitor will be using the Apollo system of United Airlines.

The rival groups have been aggressively courting airlines in Asia, South America and Europe in recent months. According to Ekstrom, the undecided carriers are likely to choose a group by July.

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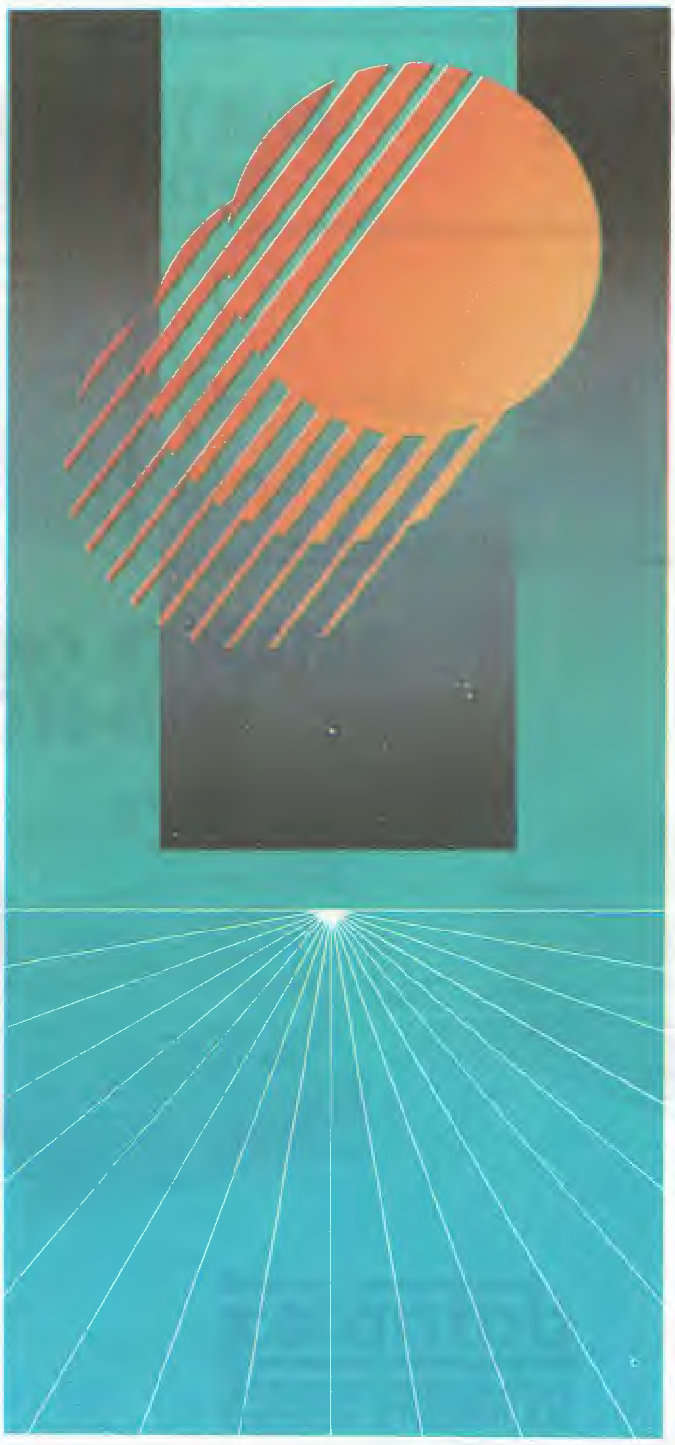

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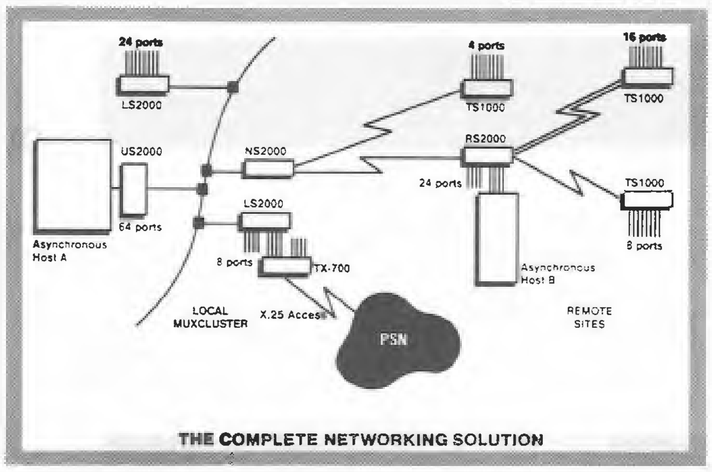

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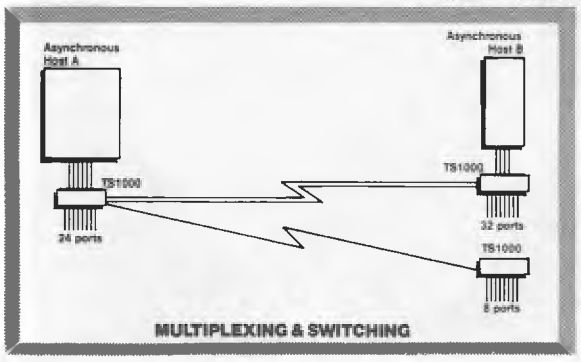

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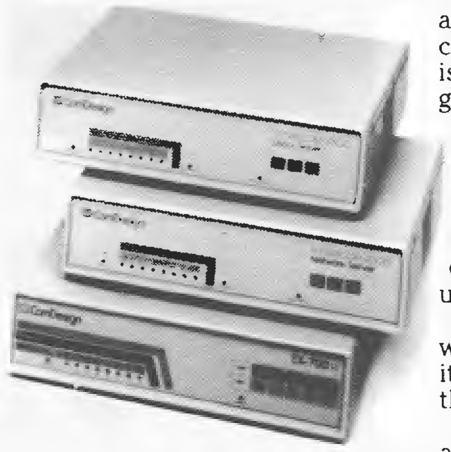

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DPX1

ETHERNET IS A XEROX TRADE MARK.

Dunlop beds down net on Austplex/Netplex

By Luis Huesch

MELBOURNE — Cutting over a new node of a nationwide data network every three weeks or so is the tough schedule Bruce Lehmann has set for his three-man team until the end of the year. But Lehmann, technical manager for the information systems unit of a Dunlop/Goodyear partnership that handles the communications requirements for more than 100 companies in the group, is not worried by the pace.

Having "bitten the bullet" of dismantling and centralising the group's dispersed computing resources and tying all operations together through Austplex and Netplex, Lehmann last month put Brisbane on stream with a 48K-bit/sec data link and said the network expansion was proceeding on time and on budget. He added the program was about a third of the way to completion, with two years still to go — and they had not even looked yet at the voice side of things.

Bruce Lehmann . . . 'bit Netplex bullet'

Tyre Marketers looks after the communications needs of South Pacific Tyres, a 50/50 partnership venture between Pacific Dunlop and Goodyear International. Both companies co-operate in manufacturing but market in competition. Members of the group include Dunlop Bedding and the far-flung Beaurepaires retail specialists. The latter's stores outside Sydney and Melbourne will upload data from portable data entry terminals ("basically a keyboard and display") from TCG to the communications nodes in the various states. Goodyear has NCR point-of-sale micros that are dialled up automatically by the central IBM 4381 in Sydney at present and have data extracted eight terminals at a time. But Lehmann said the mainframe was being phased out in favor of an Ultimate 7000, one of three the company has installed.

From May to the end of the year Lehmann and his team — plus a five-member DP/technical services group — expect basically to be doing "more of the same: we will put up a major CPU and the network behind it every three to four weeks". At present, only terminals and printers are connected on the network, but some 500 stores will get dialup access for personal computers. Some 14 wholesale sites, mainly for Dunlop and Goodyear, need to be online by year-end; four are already on stream.

Lehmann credits Telecom with much of the success of the installation to date. Considering that Tyre Marketers (Australia) Ltd's information systems unit in South Melbourne rings up a $A750,000 data communications bill a year, expected to rise to $A1 million/year within the next three months), speedy attention to requests and special handling is perhaps not surprising.

But Lehmann stressed that the carrier's co-operation went beyond merely detailing an account manager: there were regular fortnightly meetings involving 10 Telecom digital data network specialists and four company representatives during the planning phase, he said.

The companies had a network of sorts in Melbourne, Sydney, Brisbane, Adelaide and Perth, before the joint venture but maintained separate data centres in Victoria, NSW, Queensland and South Australia, with dialup access to Melbourne. But the partnership between Pacific Dunlop and Goodyear International had meant "a whole new ball game".

Lehmann embarked on re-concentrating the CPUs in Melbourne and using communications as a tool to give the group's remote sites access to this concentration of CPU power. In Melbourne, the CPUs are in three different sites, networked together via the 2M-bit Austplex link on 48K-bit/sec lines. The main centre is in South Melbourne, harboring "pretty much the whole Honeywell range" as well as 3 Ultimate Systems, with two other DP sites in Somerton, Vic, containing the South Pacific Tyres headquarters, manufacturing DP based on NCR also and Hewlett-Packard HP3000 gear and a distribution centre with a Honeywell DPS6.

Linking the three sites by 48K-bit/sec point-to-point lines using fibre-optic cable and fibre-optic multiplexers is in process, said Lehmann. Asked if the company went to tender for any networking equipment, he said "no, we know which people make the gear we need". Lehmann said it was company policy to buy Australian-made products whenever possible. In some cases, doing this comes naturally: Olex, for instance, is a Pacific Dunlop group member and JNA has a sales/support office just down the road.

On the genesis of the new network and possible options, Lehmann said he had looked at packet-switching and private networks but decided to stay away from X.25 for the time being. Private network vendors could show "no advantage," said Lehmann. But he was considering using a private bulk telex operator, and was contemplating using more voice mail. The group's DP centre is now using the Aspen-based VIP service. Lehmann also looked

(Continued page 48)

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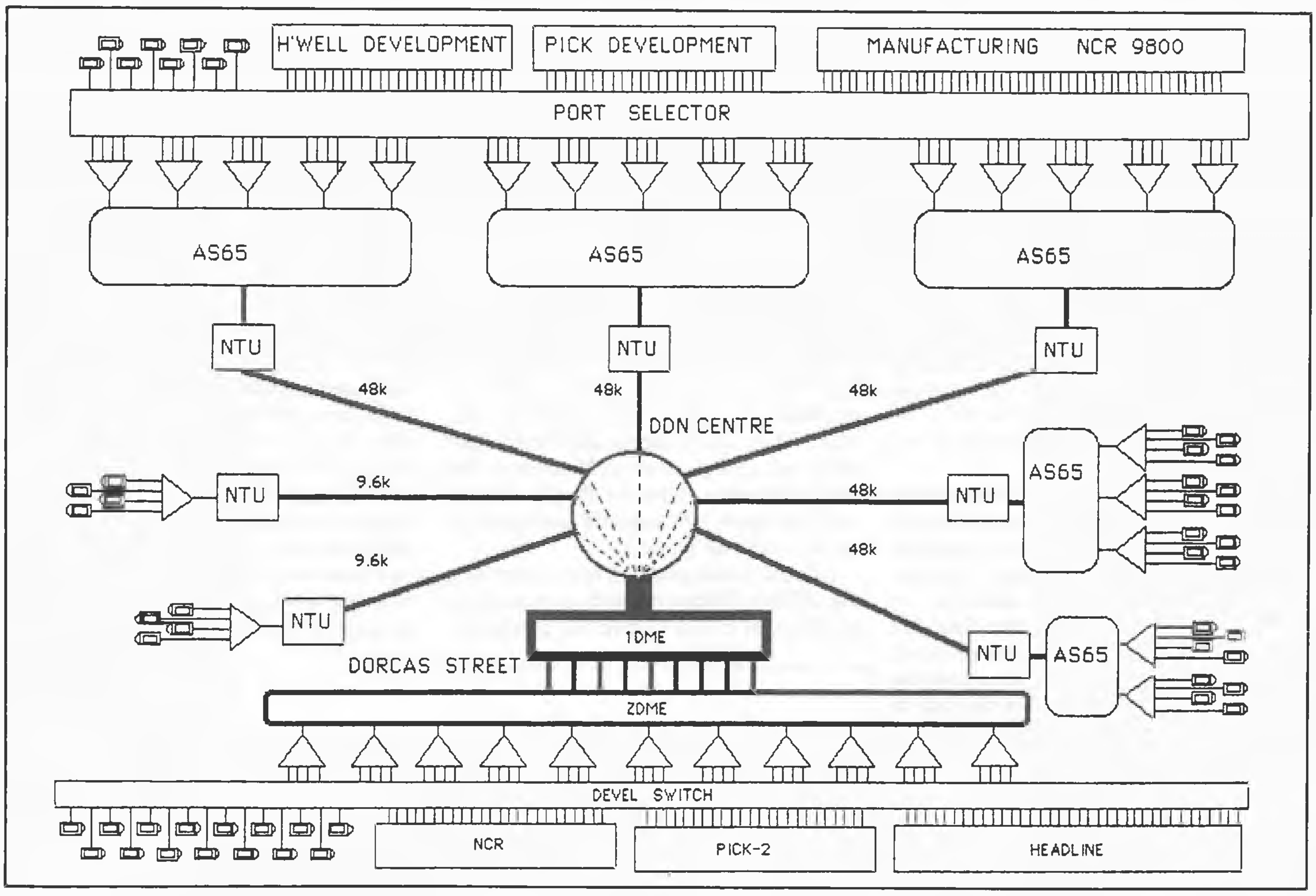
Austplex/Netplex Wan hits the road

(Continued from page 47)



The DDN centre at the Exhibition Exchange is the hub of Tyre Marketers' network

at satellite transmission two years ago but thought it was too expensive.

"The digital data network has very good performance," Lehmann said, adding that using it was a good alternative to installing local- and wide-area networks.

"The marriage of matrix switch and data PABX is the better way to go," according to Lehmann, who says there are only a few minor Lans in the group.

The data PABX, a Develswitch from Develcon, can handle up to 2000 users. It is "fed" from a JN Almgren AS-100 matrix switch. Remote sites logging on through the network or via the public switched telephone network are presented with a menu of CPUs which they can attach to. Security passwords and dialback procedures are employed, and Lehmann has begun putting encryption on critical lines. Any device on the network can "dial-up" any other device by simply providing routing information to the Develswitch.

The AS-100 rack is filled to 96 ports now — with room to grow — and each port supports up to four devices. An IBM AT-type personal computer monitors the AS-100 and logs errors to disk automatically. Lehmann noted that his group is able to "monitor 2M-bits down to the 48K-bit level — inside the stream we can look at individual signals." But he stressed that only signalling information can be monitored, not data transmissions.

Describing the Telecom Austplex/Netplex offering as "a very good service", he said that its pricing "makes it very economical" for the group to take this approach to tying its operations together. The Austplex access charge is around $A50,000 a year regardless of the number of 2M-bit/sec services taken, he said, and the six Netplex (Telecom's 48K-bit/sec time division multiplex stream offering) links to Sydney cost only $A10,000 transmission charges.

"It is very cheap," said Lehmann. "We send data by Austplex 2M-bit/sec access to the (Telecom Digital Data Network) DDN centre at the Exhibition Exchange, then run 48K-bit/sec links from there on Netplex" to the other states (see diagram above).

The Austplex access consists of a dual bearer copper link, with one bearer as backup and transmission switched from one to the other periodically. A possible alternate path from South Melbourne to the Exhibition Exchange is being contemplated to guard against loss of the dual bearer. Security, too, figures high in Lehmann's calculations, but he is understandably reticent about discussing this aspect.

Lehmann and his team also make good use of Telecom's so-called heterogeneous service option ("we were among the first in Australia to use it, possibly the first in Melbourne") which lets users aggregate different data rate streams up to the 48K-bit/sec Netplex level. In this way, even though there are separate effective data services, only the aggregate rate for the one stream is charged. And "as services are built to DDN centres a sliding pricing scale applies," according to Lehmann.

Similar to a closed-user group facility, the heterogeneous offering is available only to customers who have at least 50 per cent common shareholding, and all accounts must go to one billing centre.

Lehmann said he was "investigating further uses" for the 48K-bit/sec data links. He is "not too deeply involved with PABXs so far", with a consultant looking after the interests of the group in this area. He believes "voice and data muddy each other". However, he may look at the voice side in the next financial year and expects to "treat voice as just another digital transmission".

The group runs voice on its $A140,000/year MD1020 link to the US, which provides a direct link to the Goodyear International network through an IBM 3090 in Acron, Ohio. Profs (IBM's professional office system) messages can be exchanged via this OTC link, which also gives access to applications, news and corporate bulletin boards. Lehmann, who was flying out to the US with his boss, information systems manager Brian Edwards, shortly after this interview to attend the Interface 88 conference and show, said he could look at the Goodyear bus timetables for Acron from his Melbourne terminal if necessary.

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N 2168

Packet switching: why we need it

By Bob Slattery

X.25, also known as packet switching, is based on the International Standards Organisation Reference Model for Open system Interconnection, but is not necessarily true to it. More importantly, X.25 was NOT designed to the ISO norm since it originated with the CCITT. This means that it has a bias toward telephony rather than computer communications. But it is becoming more prevalent and it is now up to the computer industry to "legitimise" it.

Packet switching can be defined as "the routing of data in discrete quantities called packets, each of controlled format and with a maximum size".

This technique differs fundamentally from circuit switching in that circuits are not switched and dedicated to the user for the duration of the "call". Instead, the information to be transferred between source and destination is transmitted in packets over logical links called virtual circuits.

Claimed benefits for data communication users include:

Simplification of communication control procedures and equipment:

The multiplexing of packets from a number of sources on to a single, high-capacity communication link into a computer centre will provide economies due to increased use of communications channels and associated control equipment. In addition, the data from all sources is presented to the computer centre in the same transmission format, irrespective of the originating terminal. Each packet is checked for errors at each node of the network along its route and retransmissions are ordered in the event of an error.

Internetworking between terminals operating at different data transmission rates:

The ISO reference model defines layers within a communications system. The total model defines seven layers. The first three of these layers are implemented in X.25. They are:

1. The Physical Layer (or interface layer);
2. The Link Layer (or frame level);
3. The Network Layer (or packet level).

The physical layer groups the concepts involved in transmitting data through a physical medium—including interface signals and specification, interface physical characteristics, interface speed and mode of connection; dialup or leased line.

The function of the link layer is to establish those standards and procedures whereby data can be transferred without error, across an interface between a DTE (Terminal) and DCE (modem). This layer therefore only has point-to-point significance. The link layer uses the principles and terminology of the High Level Data Link Control (HLDLC). The network layer considerations for X.25 include:

- Definition and maintenance of multiple logical channels;
- DTE control functions;
- Packet size modification;
- Diagnostic and service information.

Telecom Australia argues that most teleprocessing applications are suited to packet-switching data communications services, particularly:

- Where a large number of users transmits small volumes of data over long distances;
- Where a large number of widely dispersed terminals accesses a common host computer in interactive (conversational) mode with long pauses between accesses;
- Where there is a requirement for communication between terminals with incompatible characteristics (speed, code, protocol)

Telecom sees growing interest in corporate data/messaging systems, funds transfer systems, monitoring systems such as road traffic surveillance, electronic mail/text communication/teletex, and digital facsimile.

In short, anyone who wishes to use, gather, store or process data between remote locations using computer resources is a candidate for an X.25 network.

- *Bob Slattery is program manager, corporate networking, with Techway Systems.*

X.25 equipment 'in no danger'

By David Beynon

THE estimated $A100 million worth of private X.25 data networking equipment in Australia is in no danger of being made obsolete by ISDN in the early 1990s, according to Steve Cowin, a senior engineer with JNA.

"X.25 has the distinction of being the only wide-area network protocol which conforms fully with OSI. (Therefore) any X.25 network will be easier to migrate on to ISDN than any other proprietary network," Cowin said.

Cowin's optimism is supported by the Yankee Group, which expect strong growth in the market for private packet networks for the coming five years and predicts global revenues of almost $US1400 million by 1992.

A US telecommunications consultant John Hunter, president of TMS Corp said: "Many companies like the idea of using packet switching to let multiple users reach many computers, but they do not want to set up a private network. Others feel that public packet networks are acceptable carriers, but they want to use PCs, not asynchronous terminals, to access them."

One solution is plug-in Pad boards, which Hunter describes as: "Less expensive than standalone Pads on a per-channel basis because they allow market services to be extended to installations that could not normally cost-justify them."

Rex Lehmann, JNA's strategic marketing manager, describes the cards v standalone Pads as a "horses for courses" proposition.

"While PC cards offer cost-effective access to Lans with up to 256 users, a network manager with a large group of asynchronous devices and collections of ports on a mainframe, for instance, would be best served by the standalone devices since multiple-trunk access enables them to function as switches in a limited way. By conforming with the OSI philosophy of distributed processing they reduce the need for large capacity central controllers. PC Pad cards are DCE devices only," Lehmann said.

Like Cowin, the Yankee Group rejects the rumors which suggest that the imminent ISDN and the Mega bandwidth Wans will render packet networks obsolete. While they expect that the role of packet switching in ISDN will be limited because it is not yet technologically viable to packet switch digitised voice, they predict that early ISDN implementations will build backbone networks using Megalinks which in turn will foster the growth of private networks.

According to Cowin, X.25 provides exactly what the coming primary rate access service needs for carriage of interactive data over ISDN.

X.25 CHART

SOME late, late entrants—and subsequent production difficulties—prevented *Communications World* from including the scheduled chart of X.25 Pad products. It will now appear in the May issue as a bonus—together with a comparison table of PABXs available in Australia. Vendors, in particular their marketing departments, are once more urged to supply timely responses to our requests for information so that *Communications World* can contribute to the process of market education.

—Luis Huesch, Publisher/Editor

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Datacraft, Summit in 'fortunate marriage'

SYDNEY — Seeking to consolidate its claim to be Australia's foremost data communications company and to bolster its product armory for overseas forays, Datacraft has bought 49 per cent of specialist Sydney-based comms manufacturer Summit.

Datacraft group managing director Dr Laurie Mackechnie, commenting on the 49 per cent equity acquisition here recently, described the deal as "a fortunate marriage". The two companies' products were "very complementary, with little overlap," he said. Summit's research and development matched the Datacraft range and "gives us strength to go out more into exports". Summit has a design team of more than 20 and currently spends $A1.7 million on development.

The company, which makes concentrators, protocol converters, the Suns (Summit Universal Network System) network switch and a remote security unit, among other products, turned over $A5 million last financial year. Datacraft, with an annual turnover of $A60 million, recently reported a $A1.3 million profit on revenue of $A29.7 million for the six months to December 1987.

Mackechnie, who became chairman of the Summit group, said the two companies would operate at an "arm's length relationship" through equal board membership. He side-stepped questions about an additional 2 per cent of Summit shares allegedly held by unspecified parties close to Datacraft, referring instead to a press statement which said Datacraft may increase its holding to at least 51 per cent "at a later date".

Summit founder Dr Paul Jackson continues as a major shareholder. Former Nixdorf Australia chief executive Dieter Moench, holds a parcel of shares in Summit, which he joined last year after selling connector-maker Amtron Tyree. Moench was named managing director of the Summit group. He said he expects turnover to reach $A15 million next financial year. Summit's products were "largely software-driven" and offered "lots of scope for enhancement".

Jackson, who said he "saw our weakness in marketing", initially approached the Techway Group but his talks with Techway chief Peter Jones came to nothing. Jackson will continue to work for Summit as technical director. He said the company at present was filling a backlog of orders and "just shipping products". Next year, Summit would concentrate on large networks, fibre-optic and satellite communications.

Mackechnie said Datacraft, with four overseas subsidiaries, is "looking for substantial partners in the US and Europe" and expects to finalise agreements by mid-year.

Datacraft chairman George Kepper, discussing the plight of the Australian communications market in general, said there were "a lot of small companies all doing the same thing.

"They don't communicate, (yet) they need to reach a critical mass," said Kepper. "It makes a lot of sense to go into joint ventures" to spread the development risk, he added, noting that Australia could only hope to be a "niche market supplier". He said the Suns network switch was "well ahead of anything out there" overseas.

Kepper said Australian companies were becoming worried by what he saw as an emerging attitude among multinationals with corporate partnership agreements in Australia that they were now excused from complying with local content requirements.

(Left to right): Datacraft's Dr Laurence Mackechnie, group managing director, and George Kepper, chairman with Dieter Moench, managing director, and Dr Paul Jackson technical director, Summit Communications

Whiteman's burden: how to deal with cross-subsidies

MELBOURNE — Telecom's cross-subsidies from trunk routes to rural telephone services are self-defeating: they are preventing the development or application of technology that could reduce the cost of providing service to non-metropolitan areas, economist John Whiteman told an industry seminar here recently.

Noting that cross-subsidies consitute "the greatest impediment to the deregulation and liberalisation of the provision of telecommunications services", Whiteman claims close analysis of Telecom's figures and practices shows that:

- Both rural and metropolitan networks are being subsidised by trunk calls.
- The cost of the subsidy is borne mainly by private users and small business as:
- Large businesses and the public sector are shunted into bypass of the PSTN using Telecom leased lines of Aussat services.

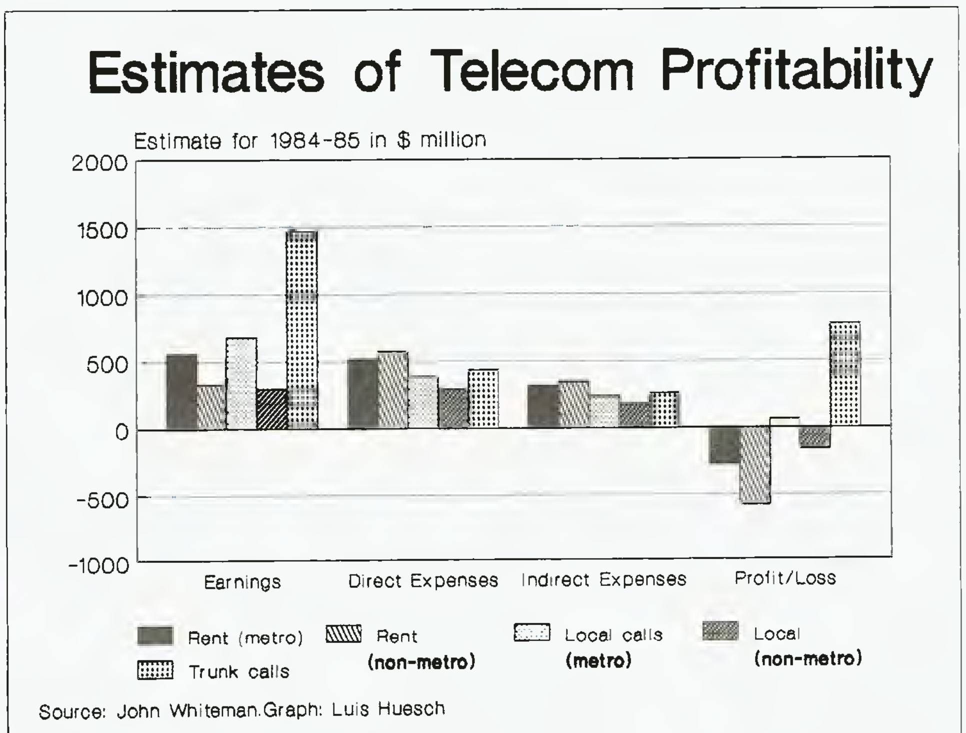
In a liberalised or more competitive telecommunications environment, by contrast, "there is little incentive for major business users to bypass the PSTN since the entry of other common carriers and/or the potential or actual entry of resale carriers must force prices down on the more profitable trunk routes."

Whiteman points out that competitive pricing would eliminate the present manner of cross-subsidising community service obligations and notes that on-budget funding "is extremely difficult to administer" and argues instead for levies on both business and non-business telephone rentals and interconnection fees for private networks. Access or interconnect charges should ideally be set by an independent regulatory agency.

Whiteman, a member of the Bureau of Industry Economics attached to the Department of Commerce, said in a paper giving his personal views on "Competition and Monopoly — Defining the Boundaries" that cross-subsidies were notoriously difficult to pinpoint in both extent and costs or benefits.

But, he said: "In the current regulatory environment the existing cross-subsidy is probably the most efficient procedure for funding (community service obligations) . . . (and) can be represented as a sort of consumption tax which is levied on usage of the trunk network." Its "major benefit" was ease of administration.

He cited Telecom estimates of the value of the cross-subsidy from trunk calls to non-metropolitan calls as $A290 million (1980-81), $A490 million (84-85), $A510 million (85-86) and $A670 million (87-88), but argued that by Telecom's own method of calculation the cross-subsidy for 84-85 alone ought to have been about $A50 million higher. Total cross-subsidisation costs had been variously estimated at between $A1000 million and $A2500 million, he said.



Estimates of Telecom Profitability

Estimate for 1984-85 in $ million

Source: John Whiteman.Graph: Luis Huesch

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Northern wins Japan beachhead

TOKYO — Northern Telecom has cut over its first DMS-10 rural area central office switch here on the eve of ISDN coming onstream — one of the few foreign companies to pitch a tent on Japanese soil and take part in the changing telecommunications landscape here. The Canadian vendor at the same time promised to deliver ISDN compatibility by the time NTT decides on a standard.

Nippon Telegraph and Telephone (NTT), Northern Telecom's client that is now the largest telecommunications company in the world, is in the process of changing from electromechanical crossbar switches directly to digital switches.

NTT plans to convert 60 million subscriber lines to digital in the next 10 years.

The footprint of the digital switch is 20 per cent of an electromechanical one, freeing up 75-80 per cent of the office space. This is a major cost saving in Tokyo, where land prices have skyrocketed, explained Edmund Fitzgerald, chairman and chief executive officer of Northern Telecom Ltd in Mississauga, Ontario, Canada.

"One of the first things Dr Shinto (Hisashi Shinto, president and CEO of NTT) did when NTT was privatised was to develop a real estate division to peddle the extra space," Fitzgerald told a Tokyo press conference.

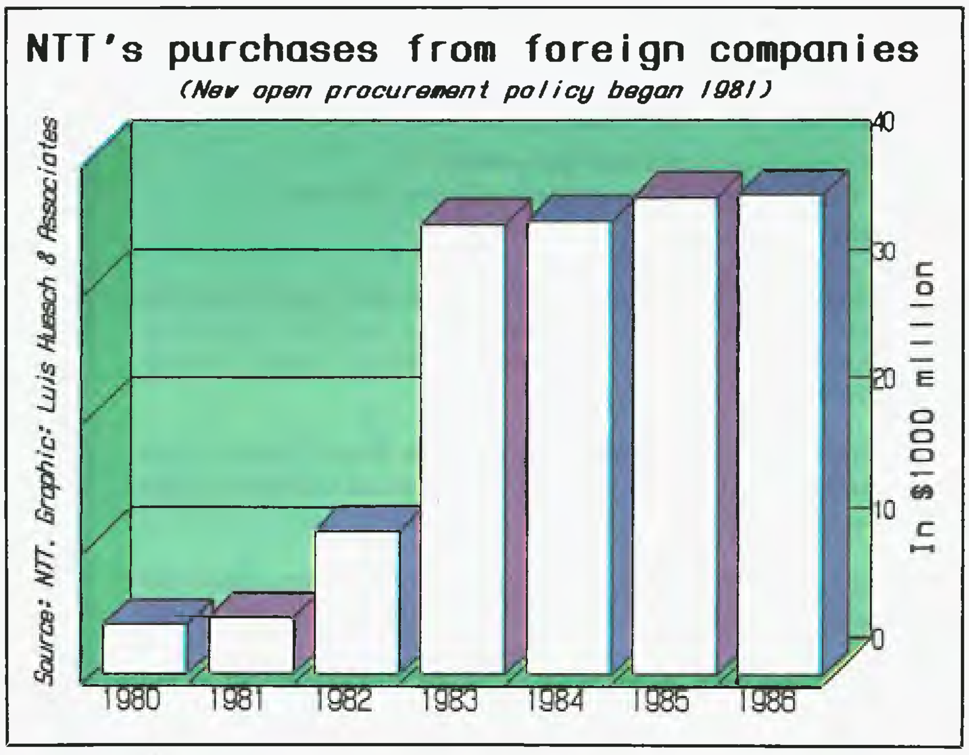
ISDN this month

NTT is in the process of setting up an all-digital integrated services digital network (ISDN) that is due to start operating this month. Northern Telecom plans to make its equipment compatible with the ISDN when NTT decides which ISDN standards it will adopt, he said.

Northern Telecom, which employs 100, mainly Japanese, staff in Tokyo, won the contract in 1986 after six years of lobbying. It spent more than $US50 million on market development costs before it got its first order from NTT. NTT bought Northern Telecom's DMS-10 rural area central office switches, which support 10,000 lines. Under the contract, NT will deliver about 750 switches over seven years to reach 1.5 million subscriber lines. By 1989 the company expects to be shipping one switch every other day.

Northern will not manufacture the switches in Japan, a move typically required to show longevity and sincerity of business here. "When we signed the contract with NTT, they made it obvious they wanted us to build switches in the US and ship them to Japan — not to manufacture them here," Fitzgerald said. He would not comment as to whether or not the request was made to help balance the lopsided telecommunications trade between the two countries.

Thorn EMI Datatech international sales manager Michael Weldon (left) and Netcomm managing director Chris Howells. . . 'concerted thrust'



NTT's purchases from foreign companies

(New open procurement policy began 1981)

Source: NTT. Graphic: Luis Huesch & Associates

Netcomm moves into mobile communications

SYDNEY — Easing out of the saturated, price-cutting modem market. Netcomm Australia is branching into cellular telephones and mobile communications, and forging a distribution alliance with UK-based Thorn EMI Datatech for high-range networking gear.

Launching his Netcomm Cellular division before an assembly of around 100 industry representatives here recently, Netcomm managing director Chris Howells made clear that Netcomm had no intention of abandoning the modem business on which the company was built. He said the company expected to finalise negotiations with Japan's NTT within the next few months to supply modems to one of the world's biggest providers of telecommunications products and services.

"Similarly, in the US, we are working toward closing contracts worth up to four million US dollars a year for the export of similar products."

But it was "obvious that standard modem technology is approaching a commodity-like status," said Howells, who saw cellular mobile communications as a new growth area for his company. "If personal computing was the most recent revolution in office automation, cellular is one of the next," he argued.

He said Netcomm Cellular would directly supply and support cellular telephones from Racal and NEC initially, laying the base for becoming "a large, sophisticated Australian developer and supplier of cellular data technologies to world businesses within a couple of years".

Announcing the distribution agreement late last month, Howells said the deal was "the beginning of a concerted thrust . . . into the top end of the Australian datacommunications market".

Initially, Netcomm will distribute the Temux-1 series of digital multiplexers intended for use with 64K-bit/sec circuits; the MX1904D and MX1908D statistical multiplexers; the Telan local area network and the 2424 modem, a V.22 bis synch/asynch modem aimed specifically at users of packet-switching networks, remote data collection and entry, EFT/POS applications and financial markets.

Aussat seeds the mobiles clouds

SYDNEY — Pursuing a piece of the pie in the sky of mobile service opportunities, some 200 delegates making up a Who's Who of the space industry and potential users attended a recent industry briefing held here recently by Aussat.

The representatives, ranging from AAP and Aerospaziale Italiana through Bond Technology and British Telecom to the Defence Department, Hughes Network Systems, OTC, NTT, Skylink Corp and Telecom strategic planning, heard Aussat officials outline a scenario involving a potential $A250 million L-band mobile communications market.

To seed that market, Aussat intends to buy between 500 and 1000 L-band mobile terminals from industry one year after it has released its draft specifications next July, according to Gary Shmith, manager, mobile technical development.

Aussat specifically invited industry to contribute to the evolving specifications for hubs, earth stations and terminals before the final requests for proposal go out into the market from mid-89. Officials said a lot of development work is still needed, particularly to hold down antenna and terminal sizes and cost, as well as on voice codecs and digital modems. Standardisation moves, to be compatible with emerging overseas systems, must also be tracked to cash in on a large potential export market, estimated at perhaps as much as $A1000 million.

Inmarsat, for instance, aims to have its C standard for low-speed forward and store packet date in place late this year, together with its standard M low-cost mobile telephony terminal specification. Canada's Telesat, which has a mandate for a full mobile system, is waiting on the US before finalising its C standard late next year. A US consortium expects to start L-band services by 1992 — and may yet pip Australia at the post with the world's first such offering.

L-band services to be offered via the two second-generation Hughes satellites from 1992/93 include "near-PSTN quality" full-duplex telephony, mobile messaging, data collection such as low-speed remote data logging, packet data transmission and position fixing. Two-way operation is anticipated for all terminals: even paging systems may need to get an acknowledgement of messages transmitted.

Colin Elston, principal system design analyst, said for the voice and data terminal "acceptable quality" was being achieved now at 4.8K-bit/sec digital transmission, with better than 10^{-3} error rates. But toll quality was now possible only at 9.6K-bit/sec.

Paging and packet data terminals costing between $A2000 and $A3000 and tipped to become considerably cheaper were envisaged for intermittent operation at very low-duty transmit cycles and with very short packet links.

Aussat had an open mind about possible modulation and access schemes to be used, and would go for the one that was most economic for the user and still profitable for the carrier. After all, Aussat wants the services to be "market-driven".

A major impact on viability of Aussat's L-band services would come from the billing system — it will be the first time Aussat has to deal with lots of small customers and fears it may end up spending more on billing them than it can charge them for system use.

Billing, capacity allocation, usage and performance monitoring is to be carried out by fully redundant systems at the Aussat major city earth stations — and the system adopted must be compatible with the carrier's Digital Equipment Corp infrastructure.

Meanwhile Aussat has reached agreement with Japan to use the Japanese ETS-V satellite for an experimental L-to-L band link and is building a hub station in Sydney as well as fitting out a van as a mobile laboratory for propagation measurements, antenna design testing and data collection.

The Australian pilot, due to be operational from next month, is open to industry participation for antenna, voice codec and modem design evaluation, testing of terminal prototypes and evaluation of protocols for channel assignment and billing.

***NB:** Even before the briefing. AWA and British Aerospace Australia penned an agreement to spend more than $A500,000 on a feasibility study for an all-Australian L-band mobile system.*

ESDI drives certified

NOVELL has certified Core International's HC series as the first line of enhanced small device interface (ESDI) advanced drives and controllers to be compatible with Novell advanced Network version 2.1 (SFT II).

This line of drives comes in formatted capacities of 40, 90, 150 and 310 M-bytes. Core claims that the average access times in the range of 10 to 17 milliseconds, make the HC series the fastest drives available for Novell networks.

The CoreHC controller operates at more than 900 K-Bits/sec, which according to Core, makes it five times faster than the standard AT type controller.

The top of the range 310M-Byte HC310 drive allows the users of IBM PS/2 models 60 and 80 to have storage capacity greater than the Compaq 386/20.

The HC310 has an ESDI interface that allows it to plug directly into the IBM controller providing transfer rates of 10 MHz.

Available software includes Gigafile which allows the entire drive to be partitioned as one volume, as well as providing the ability to link multiple drives as one (up to 1000M-Bytes), and packages which provide Novell and Xenix compatibility.

The HC series drives are compatible with IBM PS/2-60 and 80, Compaq 386 (166 & 20 MHz) and most 386 & 286 AT-Bus machines. They retail from $A585 (ex tax) up to $12,800 (ex tax) for the HC310.

MicroAustralia Software Distributors Pty Ltd: (02) 736 3299.

Unit can run on battery

THE Courier 53 G-111, a Telecom-approved portable facsimile/photocopier, can be either directly or acoustically coupled to a telephone line. The unit operates and recharges from mains supply or 12-volt car battery. Modem speed is 4800/2400 bits/sec switchable and resolution is 8 dots/mm.

Price is $A2995 including tax and leather carry case.

Future Sight Products: (02) 922 2625.

Hands off terminal timer

THE DPX-S50 Dataclock from Dataplex is a fully self-contained, low-cost unit that plugs into a communications port of a PC or terminal.

The unit provides, on demand, an independent time and date at the top left-hand corner of the screen.

Dataclock has its own password protection and an auto baud feature which allows the clock to adjust to the port speed.

Dataplex: (03) 735 3333.

Buffer cuts data error

DATAPLEX claims that its new DPX-840 timing buffer will dramatically reduce the incidence of data error caused by clock slippage.

Serial data channels including modems, multiplexers and BBC and SDLC data streams which cannot be configured for zero clock slippage can be interconnected with the DPX-840. The unit operates at data rates from 1200 bits/sec to 19.2 K-bits/sec.

The timing buffer allows internally clocked modems to be connected as tails from the Telecom DDS, and multi-drop modems can be interfaced to splitters and short haul modems.

Dataplex: (03) 735 3333.

Datacraft adds Craft series

DATACRAFT has released five products in its new "Craft" series of modems. The five products are:

Mailcraft — a videotext modem with speeds of 300, 1200/75, and 1200 bits/sec.

Infocraft — a 1200 bits/sec Hayes/Concord modem with autodial and autoanswer.

Quadcraft — a four-speed, "fully-featured modem", with error correction.

Speedcraft — a four-speed modem with data commpression capability allowing it to operate at up to 4800 bits/sec asynchronous transmission.

Procraft — a V.32 modem.

Recommended prices (inc tax): Mailcraft $A488, Infocraft $A750, Quadcraft $A959, Speedcraft $A1439, and Procraft $4995.

Datacraft: (03) 727 9111.

Modem has test features

THE Case 2424 modem is CCITT V22bis- and V22A&B-compatible and supports the Hayes AT command set.

The modem incorporates test and diagnostic features including local and remote loopbacks and a self-test pattern generator.

Features include pulse and tone dialling, audodial; auto-answer; auto-disconnect; and non-volatile Ram.

Price is $995 including tax.

Case Communication: (02) 451 6655.

Connection simplified

DEC (Australia) has announced a new communication option for Microvax 2000 systems that simplifies their connection to IBM host systems and supports X.25.

The new option is a single-line synchronous communication interface that supports VMS/SNA software system version 1.2 and Vax Packet Switching Interface Version 4.1 that runs under VMS operating systems Version 4.6. It is priced at $A2879.

Switch gives PC access

THE Rose Masterswitch from Datacraft is a microprocessor controlled switch that allows a small work group of PCs to access several peripheral devices. Features include printer spooling, menu-driven configuration, job queuing, priority access and a daisy chain support so that switches can be networked.

Several models are available ranging from five ports to nine ports — serial, parallel or both. The Rose Masterswitch is priced from $A190 per port.

Datacraft: (03) 727 9111.

MEMO

TO: **New vendors of communications products**
FROM: **Luis M Huesch, Publisher, *Communications World***
RE: **The market slump**

MORE than 8000 communications professionals know *Communications World:* they read the premier Australian comms publication each month and rely on it for information they don't find elsewhere. (The ABC's MIS chief is speaking for many of them when he says *Communications World* is "streets ahead" of a similar UK publication to which he subscribes!)

MANY of those 8000-plus influential, order book-ready comms professionals **don't know you** because you do not advertise in this newsmonthly dedicated to the all-important communications marketplace; or because you restrict your "campaign" to one-issue stands.

1988 is going to be a tough year to survive: the seasoned MD of a group of 16-odd comms companies is being deluged with calls from companies that say **HELP**!, buy us out, joint venture us, bail us out!

Survival of the fittest and strongest, more than ever, is the name of the evolutionary game — but how do you GROW to be one of the few survivors?

Paul Wood, Australian CEO of a comms company that has made it both here and in the tough US market, counselled recently that you should:

- have a top product (niche markets = nice markets)
- have a top-rate business plan/management team
- think globally.

To which I would add:

KEEP TELLING CUSTOMERS ABOUT IT!

The more the better, the more often the better, or — to paraphrase that great German military strategist Clausewitz —

DON'T SPRINKLE, SPLASH IT ON!

I would like the communications industry to grow as a whole, benefiting both users and vendors. And *Communications World* is an essential part of the industry's growing-up process, informing and educating users about new products, techniques and technology trends.

SNAP SURVEY:

Please cite here your reasons why your company chooses to stay on the sidelines in this campaign:

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and mail to: Communications World, Box 929, CROWS NEST 2065 ATTN: Luis M Huesch

NB: take the easy way out and pass this memo on to your marketing manager marked ACTION PLEASE!

Case launches new net building blocks

CASE Communication Systems claims to provide the most comprehensive line of statistical multiplexing products available following the release of a new range of its DCX series.

The new British-designed DCX (Data Concentrating Exchange) releases include a new "top of the line" model, several new midrange models, enhancements to virtually all products, and an integrated wide-area and local-area networking system.

The new "top of the line" is the DCX 860 network switching node for medium to large corporate data networks. Higher throughput performance, coupled with extended gateway facilities for IBM protocols and full network management options are said to give Case Series DCX the highest networking functionality for both asynchronous and mixed-vendor environments.

Based on a multiple M68000 processor architecture, the DCX 860 combines multiplexing, concentration, data switching, port contention, X.25 gatewaying, protocol conversion and network management in one upgradable product.

As many as 255 switching DCX 860 nodes can be interconnected, each supporting up to 240 devices which are directly attached or connected through a subnetwork of smaller DCX nodes (see diagram).

The new DCX 844 concentrator provides a second level of multiplexing for even higher data link efficiency. It concentrates already multiplexed data from four other DCX devices on to a single high-speed link while reportedly removing data errors caused by noisy circuits. The soft mapping facility of the DCX 844 allows any channel on any link to be connected to any other, providing total routing flexibility, it is claimed.

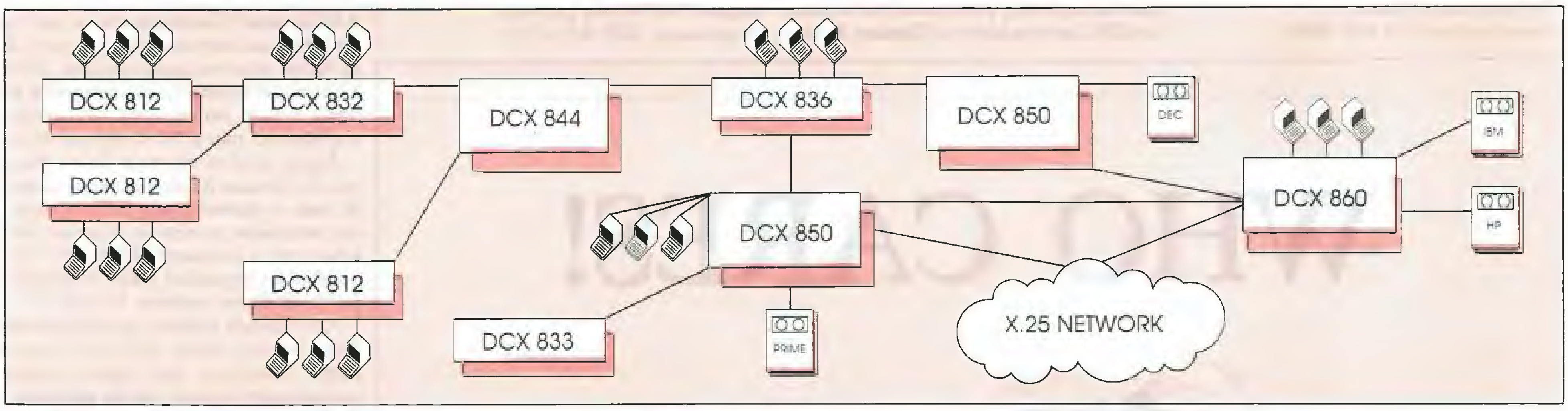
The midrange DCX 836 point-to-point multiplexer fills the price/performance gap between the current DCX 825 and DCX 840. Supporting as many as 60 asynchronous terminals, it is suitable for a medium-size grouping of terminals feeding into a larger corporate network.

The DCX 832 networking multiplexer can be used in a point-to-point mode to support remote sites feeding into a larger DCX node, or as a midpoint within a network. It supports up to 32 terminals and, with its onward-linking and mapping features, as many as four other multiplexer units.

The DCX 832 and the DCX 836 are claimed to have improved performance, supporting channel speeds of up to 19.2 K-bit/sec and composite link operation at up to 80 K-bit/sec.

The entry level DCX 812 point-to-point multiplexer has also been upgraded. It now has higher channel speed support, up to 19.2 K-bit/sec.

Another new addition, the DCX 8150 distributed switching multiplexer, is aimed at the small network. It provides multiplexing, concentration, user switching and port contention, and can support up to 72 asynchronous terminals.



DCA teams up with Siemens, shows line of Wan products at CeBit

(Continued from page 11)

The new products unveiled at CeBit are designed to strengthen DCA's 114-port Series 300 networking statistical multiplexer.

Lan Gateway, a broad-and-software package, links the Series 300 to TCP/IP-based Ethernet networks. Users on TCP/IP networks can cross the link to access resources on the wide-area net, and users on the Series 300 side can access resources on the local net.

Since the Series 300 can tie into X.25 networks, TCP/IP users can use Lan Gateway as a tool to access packet-switched networks. DCA said the product is the first TCP/IP-to-X.25 link on the market.

Lan Gateway provides up to 256 virtual circuits at a composite data transfer rate of 10M-bit/sec. A Series 300 can support up to 72 Lan Gateway boards. Applications that can run over the link include terminal emulation, file transfer and a DCA network security product called User Services Facility. DCA also announced a terminal server called Lan Server that connects up to 16 terminals to an Ethernet. When used in conjunction with Lan Gateway, the server can conduct sessions with devices on the wide-area network using a communications protocol called Lan Pro, which DCA said is four times faster than TCP/IP. The product supports transmission of up to 400,000 characters per second, according to DCA officials.

Lan Server comes in eight- or 16-port versions, with individual port speed up to 19.2K-bit/sec. It is software-configured, compatible with DCA's Network Management System, and it can connect any synchronous terminal.

Lan Gateway and Lan Server, which can operate either independently or in tandem, will be available within 90 days.

DCA said it is developing a TCP/IP interface for workstations supported on one of its 10-Net local networks that will support TCP/IP sessions with host-based TCP/IP workstations. If used in conjunction with Lan Gateway, the interface would enable 10-Net devices to communicate with workstations on a Series 300 wide-area network.

DCA also announced Protocol Processor II/ST, an enhanced version of a previously existing protocol converter called Protocol Processor II. The device can support two sessions for each of up to 16 asynchronous terminals on a Series 300 network connected to an IBM 370-architecture mainframe or System /3X host.

While the previous version required multiple cables between the Series 300 and the protocol converter, the enhanced version requires only a single RS-232 link or telecommunications circuit. According to DCA, it is the only such protocol converter on the market.

Applications supported include terminal emulation, file transfer and both IBM and Ascii printer support. An exact price is not yet available, but product marketing manager Ken Davis estimated it will cost approximately $US7500.

DCX gateways

SERIES DCX gateways and links add multifunctional capabilities to terminals within a mixed vendor network environment. The gateway modules provide protocol conversion and device emulation.

Link modules provide protocol emulation and transport capabilities enabling high-level protocols to be carried across a DCX network in the most economical manner.

Case gateway products available for the DCX processors include S-Gate, which provides IBM SNA/SDLC-to-asynchronous protocol conversion; X-Gate, which gives DCX uses access to X.25 packet-switching networks; and A-Net, a reverse protocol converter that allows IBM synchronous devices to emulate asynchronous devices.

Synchronous protocols transported by DCX networks include IBM, SNA/SDLC and bisync; DEC DDCMP, HDLC, ICL, Unisys and Honeywell Bull.

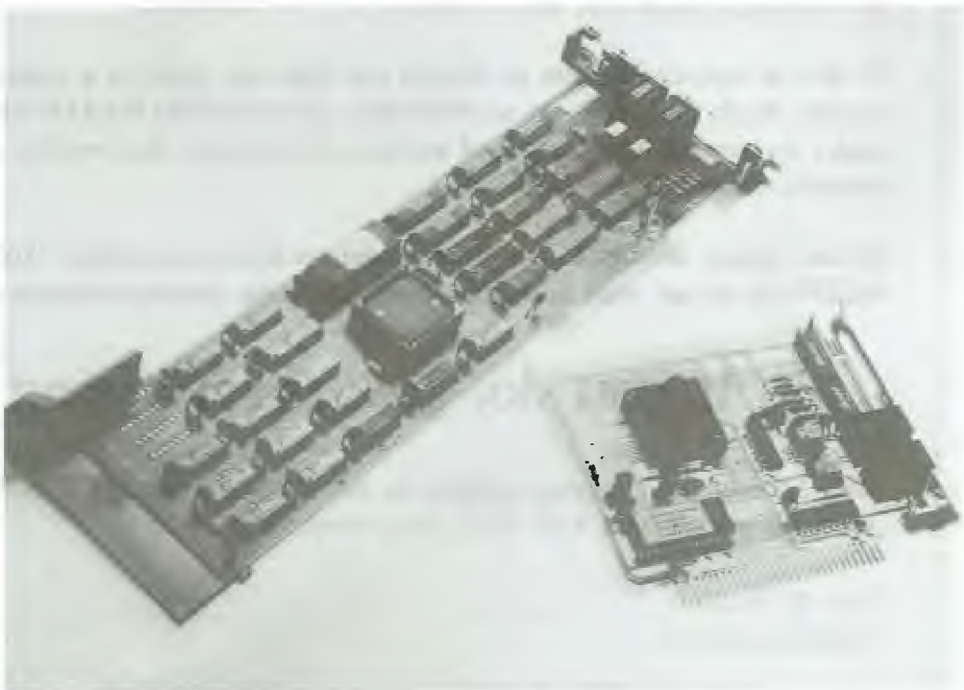
Network adapter card package gives PS/2 power

THE Awanet network adapter card package — Microbuss/2 — enables IBM PS/2 Model 50, 60 and 80 microcomputers to network together and network to PS/2 Model 30 computers and any IBM XT, AT or compatible machines. One board fits into IBM's PS/2 Micro Channel bus and the other into standard PCs, PC/XTs, PC/ATs or compatibles.

Awanet claims that this package allows users to enjoy the power of the PS/2 50s, 60s and 80s as file servers while still being able to use all existing personal computers in the same network.

The Microbuss/2 card package includes software and a manual for a price of $A895 (ex tax).

Awanet: (02) 360 2822.



Awanet's Micro Channel networking card for IBM 50s, 60s, 80s. The smaller board is designed to fit into a PS/2 Model 30 PC.

Tops Lan Flashtalk boosts PC transfers

IMAGINEERING has released Version 2.0 of the Tops/Dos and Tops/Macintosh local-area network software packages.

Tops/Dos is priced at $A360 (inc tax) and incorporates Flashtalk, a PC-to-PC communications architecture that operates on Tops at three times its former Appletalk. speed. Flashtalk is a combination of new drives in the Tops/Dos software and a dual-speed clocking mechanism called Tops Flashcard, which is priced at $A595.

Tops/Macintosh Version 2.0 is priced at $A360 and features a "Remember" function that allows users to make files available automatically to the network.

Also available for $360 (inc tax) is the Tops Netprint Version 2.0, which enables IBM PCs and compatibles to print directly to Apple Laser Writers.

Imagineering: (02) 697 8666.

Completely rewritten Tapestry is launched

SYDNEY—Specialist communications products distributor Sourceware used the Communications '88 show here to launch release two of Torus Systems' Tapestry distributed network operating system.

A complete rewrite of Torus' current Tapestry product, Tapestry II supports both Netbios and Microsoft's Redirector, allowing users to share remote resources, according to the vendor. Used with Torus Netbios Interconnect Bridges, Tapestry can serve to set up wide-area networks communicating over private or public packet-switching networks, such as Austpac.

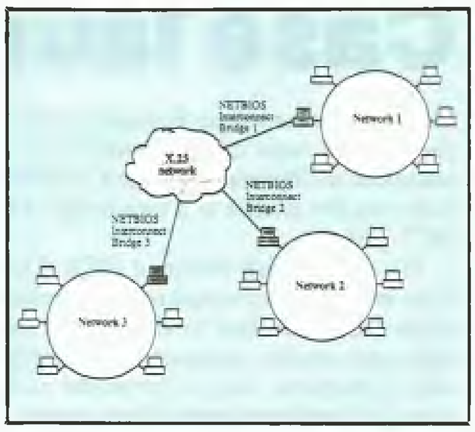
Tapestry II also supports the Server Message Block (SMB) protocol, allowing support for such third-party servers as Netware and PC Lan in addition to Tapestry II's normally serverless configuration in which storage and remote processing are distributed to non-dedicated workstations on the network. None of these features was available in earlier versions of Tapestry.

Torus Systems has pledged to support IBM's OS/2 Lan Server and Microsoft's OS/2 Lan Manager when available.

The Tapestry II user interface is similar to Torus' icon-based interface with a menu-only option for more experienced users, Torus said.

A follow-on version of Tapestry II will be available in July, Torus said. It will feature an asynchronous gateway offering a number of terminal emulations and additional support for Netbios gateways.

Sourceware: (02) 411 5711


NETBIOS Interconnect Bridge 1
Network 1
X.25 network
NETBIOS Interconnect Bridge 2
NETBIOS Interconnect Bridge 3
Network 2
Network 3

Interconnection of Tapestry II networks using X.25 bridges.

Aspen adds French, better management

AAP-Reuters Communications has announced new software enhancements for its Aspen voice messaging system, including bilingual English-French prompting and better system performance management and statistics plus a PC download option.

Aspen product manager David Blanks said the Release 8 software can also transfer calls or queries made to the system to any telephone number in Australia when linked into a company PABX. This made possible an expanded range of privately-provided dialup services, he said.

AAP Reuters assistant general manager Brian Perkins added that the improved pager outcalling and voice mailbox management features will be attractive to the busy executive on the move. The new Call Detail Records software option would benefit both single-site and multi-site Aspen users. The system has 26 users in government, banking and commerce in Australia and New Zealand. Mobil Oil and Telecom NZ have become the latest additions to the Aspen user list, with Telecom NZ using the system in connection with cellular paging services.

According to Blanks, Japanese will be added to Aspen's choice of prompting languages in future so that Australian companies could communicate better with their trading partners across different time zones.

Grapevine caters for small groups

STRATEGIC Computer Services has released Grapevine, a local-area network software and interface card package intended for use in specific workgroups and small offices.

The user interface includes single keystroke access and drop-down menus. Responsibility for maintaining the network is shared, with facility provided for the more experienced user to oversee the general administration tasks.

Grapevine's operating system requires less than 128K of Ram and resides beneath Dos. Grapevine transmits MS-Dos files in their exact format.

Tax-inclusive price is $A1200.

Strategic Computer Services: (02) 969 8899.

Dealing room comes to PS/2

IBM PS/2 and Compaq compatible DR-One software (Dealing Room Online Network Environment) from Microcomp provides interfaces to financial services such as Reuters, Telerate and Bridge Data, and to host applications on IBM, Digital Equipment, Data General and Geisco.

Price on application.

Microcomp: (03) 670 9681.

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Luis M Huesch
Publisher/Editor

COMMUNICATIONS WORLD

Austnet's secret of success

By Noel Bennett

FROM a standing start in 1983 to a 1986-87 balance sheet showing a net profit of $A1,025 million, Austnet is now managing the "most sophisticated network of its kind in the world".

The Austnet Group has made this auspicious start by choosing an unusual niche market, Electronic Funds Transfer (EFT) switching. Its growth not only illustrates how Australians are becoming increasingly "switched on" in conducting their personal finance, but also how a service provider can become involved in the development of hardware and software to better provide that service.

According to Greg Nash, sales director, with Austnet, one reason for the group's growth is that EFT is a highly specialised function requiring not only considerable expertise, but also high capital expenditures and the ability to change with inception of new technology and services demanded by the public.

Austnet's seeds were sown in 1983 with capital supplied by Automated Financial Services Pty Ltd, an affiliated company of the Association of NSW Credit Unions, and the Perth Building Society. Besides the original shareholders (Perth Building Society is now the Challenge Bank), new shareholders include Resi Statewide Building Society and Eftel Pty Ltd, the research and development arm of the Austnet Group. The net worth of the group is now approaching some $A12 million.

160 clients

One measure of the growth in use of automated teller machines (ATMs) and point of sale terminals (EFT/POS) in retail stores is the growth in the customer base — Austnet now processes over 1.8 million transactions a month and provides switched networking services to some 160 clients including six banks, 15 major building societies, a whole host of credit unions as well as major retailers and other EFT service providers and, most importantly, Visa Card International.

With Visa International, Austnet has an online satellite link to that group's headquarters in California and provides a domestic authorisation centre for retail purchases and cash advances. Austnet also manages Visa Australia's authorisation link.

In addition, Austnet has interchange connections to the major ATM and EFT-POS networks in Australia. In total, Austnet has access to some 2000 ATMs throughout Australia and, with the Visa connection, to some 20,000 ATMs worldwide.

Austnet had previously dispersed its message switching hardware around Australia, but now had centralised its operations in North Sydney, giving better economies in terms both of hardware and people.

With connections to 105 computer hosts, ranging in size from small Ultimate machines to large IBM 3090 mainframes, Austnet not only provides the largest EFT network of its kind in the world, but is also one of the seven strategic key players in the national EFT market place in Australia, the others being the four major trading banks, Telecom and Coles Myer Ltd.

This positions the company to not only develop new products, some in conjunction with the other Australian companies, but also as a major contributor to the directions of EFT in Australia — particularly EFT/POS.

The original Tandem Non-stop computers used as the switching mechanism between the various hosts, have now been augmented by Mercury 11, a specialised EFT/POS switching system designed and developed by Eftel.

Nash said that development of Mercury II, which incorporates Concurrent 3200 superminicomputers, arose from fact that encryption demanded very high computational resources and that conventional systems based on mini-computers by themselves would not cater for future requirements. EFT required a high performance communications solution.

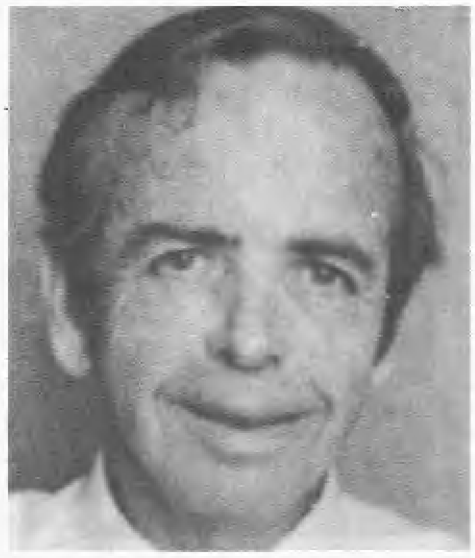
Mercury II accepts messages being addressed to an interchange address and in turn validates, undertakes Pin (Personal Identification Number) verification, logs and processes, before being switched to the appropriate destination.

Eftel had recently established a US subsidiary to market Mercury II for which the company had "high hopes". With the market increasingly demanding standardisation wherever possible, Eftel had chosen on the Australian standard for interface on EFT, AS 2805. The protocol converter was designed in conjunction with Eracom, using this standard with sales being made to clients.

With its mission to engage in and promote the development and acceptance within Australia of "home-grown" communications and projects, Austnet had expressed its concern at the architecture, design and the overseas origin of Telecom's attempted entry into EFT with the recent introduction of its Tran$end network.

Nash said Eftel, in conjunction with Hypercom, had developed and built a network access controller (Nac) which it used within its own network and which had been sold in 10 Asian countries.

Accordingly, Telecom's choice in view of this performance had been disappointing.



Noel Bennett

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There's a real story behind all that hoopla

By Thomas Nolle

FRAMINGHAM Mass — The trouble with big hardware announcements, especially from IBM, is that they often overshadow really meaty things that happen at the same time. Look at the fanfare given IBM's introduction of the 3745 communications processor in January. It's certainly an important product, but the software announcements IBM made at the same time could have a far greater impact on the way IBM mid-range systems communicate.

Indeed, those packages could provide a viable way into IBM's Systems Network Architecture mainstream for System/36s linked via Low Entry Networking, an SNA-based architecture that provides peer-to-peer communications using the PU2.1 protocol. This, in turn, addresses a long-standing user criticism of IBM's System/34, /36 and /38 series: It is a maverick computer line that will never fit into — or provide a migration path to — IBM's other computer and communications architectures.

Under old SNA rules, even the smart mid-range processors, called PU2.1 nodes, had a limited ability, at best, to communicate with each other over an SNA network without host intervention.

Under the new rules articulated in the recently announced Network Control Program (NCP) Versions 4 and 5, SNA peripheral nodes of the PU2.1 class can communicate through intermediary PU2.1 nodes or over an SNA backbone of communications processors such as IBM's 3745 or 3725.

This ability allows System/36s and/38s to communicate over an SNA network using IBM's Advanced Peer-to-Peer Networking (APPN), one of the earliest low-end networking offerings to be released by IBM. The peer communication that PU2.1-based APPN allows can still take place without host involvement, even within SNA.

Another useful enhancement that IBM released with the latest NCP versions is the ability to dynamically update configuration and capabilities tables in a SNA network. This eliminates the need to update NCP tables every time there is a change in a PU2.1 node's logical makeup — for example, the number and type of devices connected to a System/36.

The new release of NCP for SNA controllers also extends the independence of logical units under the control of these peripheral mid-range system nodes. Independent logical units can operate without establishing sessions with the Systems Services Control Point (SSCP), or the mainframe host. This also means that in multihost networks, SSCP ownership of a node can shift without destroying the sessions in progress.

All of this makes the SNA network containing mid-range systems as PU2.1 nodes, or small sub-area hosts like IBM 9370s, able to survive the loss of a host. The ability to do so may be one reason for the redundancy features of the 3745 controller, since it acts as a conduit among the network's smarter nodal members, with or without host involvement. With the formal release of the CCITT X.25 SNA Interconnect, the SNA network can even act as a backbone for a packet-switching network. This is important because the X.25 connection is one of the few industry standards IBM supports as a way of letting non-IBM systems communicate with nodes on the SNA network.

By building host-independent networking into SNA through the PU2.1 protocol, IBM is making a place for its mid-range systems in the SNA mainstream — and potentially in its Systems Application Architecture (SAA), as well.

Three levels

IBM has been working hard to develop consistent application programming interfaces for key SNA elements, such as LU6.2, so that programs developed for SNA can run on and communicate across all three system levels: microcomputer, mid-range and mainframe.

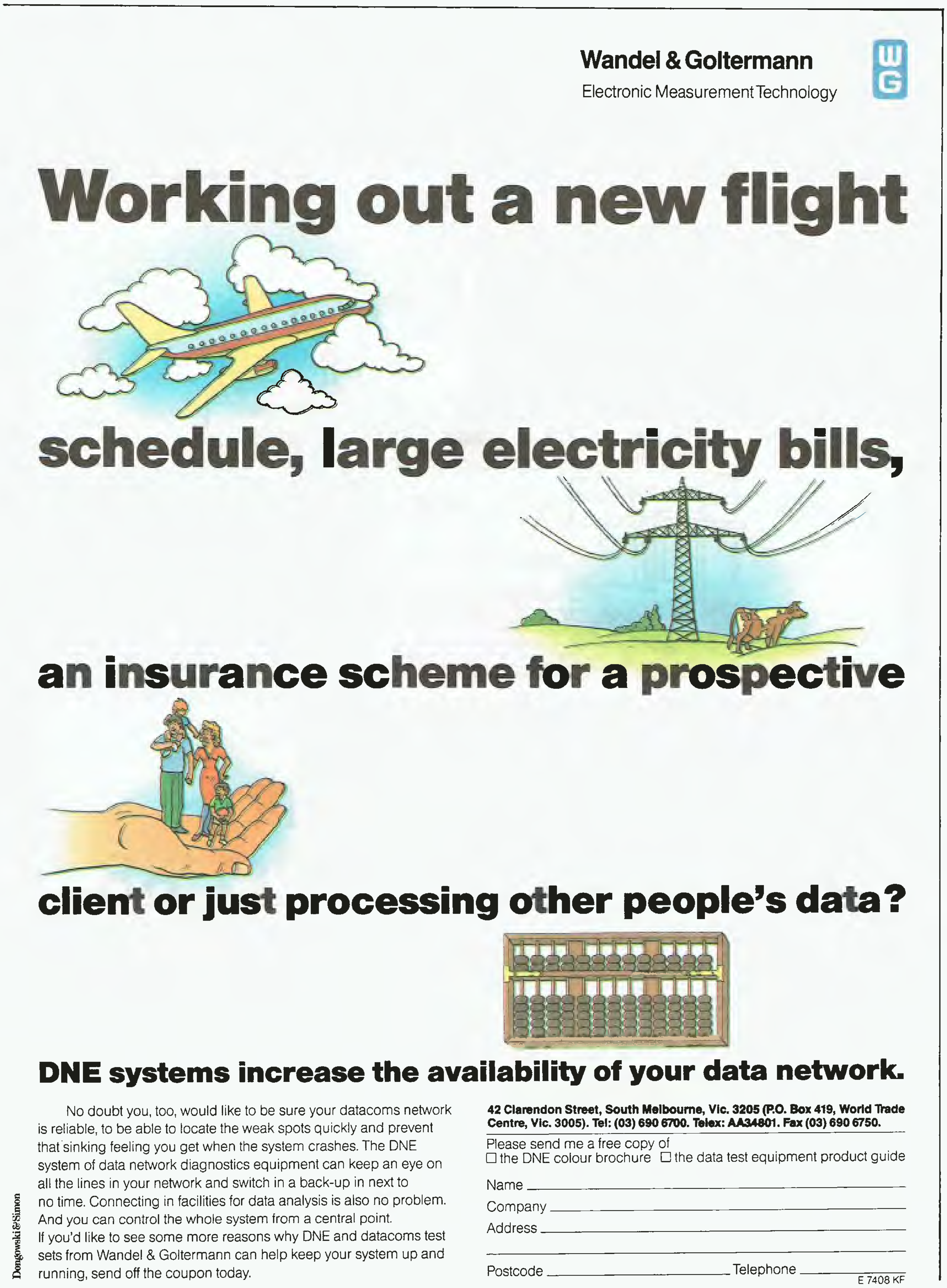
This standardisation under the SAA umbrella is the key to the closing of the mid-range loophole IBM opened with its nonstandard System/34, /36 and /38 architecture. It also makes the System/34, /36 and /38 line far more palatable to users who want a mid-range system that can function as a liaison between workstation and mainframe architectures.

Some have high hopes that IBM will provide better integration through Silverlake — its long-awaited hybridisation of the System/36 and /38.

On the other hand, IBM can do much on the software and communications fronts to integrate the mid-range line with its other mainline computer architectures. Through SAA, the System/34, /36, and /38 gain application mobility through SNA's Low Entry Networking.

IBM is working hard to fit its mid-range line into the SNA mainstream — to evolve SNA into a networking architecture that can effectively support a peer-to-peer network of mid-range systems as well as a hierarchical host network. This aspect of IBM's January announcements really deserves the most hoopla and bears close watching.

- *Thomas Nolle is president of CIMI Corp.*



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Dongowski & Simon

The Micom Box allows customer upgrade of 4-channel units to 10 to 16-channel units, in minutes, and without technical knowledge, to accommodate a user's growing network needs.

Backwards compatibility with M800/2 multiplexers using the appropriate Featurepak maintains a user's existing Micom multiplexer investment.

Features of the asynchronous Micom Box Type 2 (MB 2) include:

☐ 'floating', menu-driven command port,
☐ channels can be configured up to 9600 bps with composite data rates up to 19,200 bps,
☐ satellite transmission support,
☐ data compression support,
☐ special async protocol support for:
  HP ENQ/ACK
  DEC VT100 Smooth Scroll
  Tandem T-Pause
  Concurrent Flow Control
  Wang Flow Control
☐ full Telecom Category A approval status,
☐ wide range of Featurepak available.

At the top of the Micom family range is the Box Type 3 (MB 3) — a synchronous/asynchronous statistical multiplexer, which allows up to 8 synchronous channels or 16 async channels, or a combination of both, over a single composite link.

By permitting the use of both synchronous and asynchronous channels over the same composite line, the MB 3 eliminates the need for separate links, providing more economical communications.

In addition, it is a statistical time-division multiplexer, which means that aggregate synchronous data speed can be as much as four times greater than the composite speed. Aggregate asynchronous data speed can be eight times the composite speed or more.

All 16 channels support asynchronous input data rates up to 19,200 bps. Synchronous channels can run at rates up to 19,200 bps with wide band composite support to 72,000 bps.

The MB 3 provides wide band composite interface support for RS232, V.35 and X.21.

Synchronous data formats supported by the MB 3 include:

☐ IBM 3270 BISYNC
☐ DLC (BOP)
☐ ASCII BISYNC
☐ DEC DDCMP
☐ HP SYNC
☐ HONEYWELL VIP 7700
☐ ICL C03
☐ IPARS
☐ UNIVAC U200
☐ CDC UT 200
☐ MICOM CASCADE

The MB 3 also supports the same asynchronous protocols as the MB 2.

A wide range of Featurepaks is available for the MB 3, including the MB 3 Concentrator Switch which allows LCi, Micom Box Type 2 and 3 and Micom's Micro 800/2 multiplexers to be linked in combination in a powerful 'star' network, serving up to 255 user and computer ports, with link speeds up to 19,200 bps.

Operating as the logical hub of the network, it allows any asynchronous channel in the system to connect with any other channel in the network. The Concentrator Switch manages and routes each connection, handling queueing and conflicts as they occur. It even provides centralised monitoring diagnostics.

In today's data communications environment, with the need to cope with change and growth, the Micom 'family' or multiplexers and Featurepaks provides the ideal solution.

Micom's modular and flexible design allows change to be managed efficiently and economically with durable, easy-to-use, proven, low maintenance products.

Throughout ATUG '88, Datacraft is presenting X.400 messaging and local and wide area integration, including support for Token Ring, Ethernet, TCP/IP, X.25 and OSI standards.

Backbone capability is demonstrated using ISDN technology.

Also on display will be the highly successful range of MICOM multiplexers and Datacraft's new range of dial-up modems.

Retix: OSI Protocols made portable

Following the signing of an exclusive distribution agreement with the Retix Company of Santa Monica, California, Datacraft now is able to supply portable OSI software, as well as assistance in the portation of the software to various user hosts and consulting in OSI applications.

Datacraft's Manager for Software Development, Mr Alan Lloyd, said the agreement with Retix was playing a major role in Datacraft's strategy to develop and supply OSI conformant and Value Added Networks.

'Datacraft is fully committed to initiatives such as OSICOM and the progression and development of OSI products in Australia.

The Retix software is a key component in this strategy,' he said.

OSI is a set of communications protocols established by the International Standards Organisation (ISO) and the Consultative Committee on International Telephone and Telegraph (CCITT). The specifications of the communications protocols within the seven layer OSI model were first proposed in the 1970's, and are now being formulated by the ISO, the CCITT, and the various national standards organisations.

OSI standards have been recognised by many nations and international standards organisations, and have been adopted by manufacturers, government institutions, and large users, both in North America, Europe and Asia.

Retix was formed in January 1985 to serve the growing market of OSI/MAP/TOP products and technology, and has rapidly become the major provider of OSI/MAP/TOP protocols, development tools, and portation/validation services. Retix's growing customer base includes major computer firms, networking companies, and industrial and office automation manufacturers worldwide.

Retix provides a complete range of software, implementing the various OSI communication levels and protocols.

It is written in such a way as to be 'portable' — which means it can be 'ported' into any host environment. It allows users to implement OSI communications on their host, whatever it may be, without having to write the software from scratch.

Each Retix portable software package implements a single OSI communication protocol. The packages may be used independently or may be linked together to provide a full 7-layer implementation.

All packages are designed to be independent of the operating system to which they may be ported. Each package appears to the user as a function library with four defined interfaces. The upper interface links to protocols in the layer above while the lower interface links to protocols in the layer below. The system interface allows the protocol to access operating system services for buffers and timers. A management interface allows collection of management information and the setting of addresses.

The customer ports the portable software within these interfaces by adding portation-dependent software. The portable software may be incorporated within a driver, a front end processor or within an application program as desired.

The upper interface is provided by one or more function calls. Calls matching the service elements defined in the OSI Service Definition are provided for each layer. Each call is non-blocking and asynchronous. Requests and responses are function calls into the software module while indications and confirms are procedure calls out of the module.

Lower layer protocols will have one function call per service element for each request, indication, response, and confirm. Upper layer protocols have one function call for all requests and responses and one for all indications and confirms. In addition to those calls defined in the OSI Service Definition, calls are provided for local flow control.

Each module will handle multiple connections. Each function call at the upper or lower interface contains a parameter identifying the connection over which data will be transferred.

The upper interface on each Retix product matches the lower interface of Retix products in the next higher layer. This allows many protocols to be linked together forming one function library with interfaces at the top of the highest layer and the bottom of the lowest layer.

Alternatively, the protocols may be separated into different processes that execute on the same processor or different processors. In this case, the function calls out of the module are to customer-supplied functions that utilise operating-system-dependent interprocess communication services to send information to adjacent layers.

Any form of interprocess communication may be used as long as each item of information passed between layers for each connection is queued on a first in first out basis. Most operating systems provide shared memory in which queues may be built or mailbox services which provide a built-in queueing mechanism.

Maximum throughput and minimum delay are achieved when as many layers as possible are combined in one process. This minimises queueing and IPC overhead.

At the lowest layer, the portable must be interfaced to the communications hardware. This is done by placing information in queues as for the interlayer interprocess communication. The interrupt service routines for the communications hardware then place incoming frames in one queue for processing and retrieve frames for transmission from the other queue.

At the highest layer, the OSI communications services may be made available to the user through a customer-supplied interface software that functions as a driver or by calling the portable code directly.

Retix portable software products are in use in many countries by an impressive list of major companies, including Philips in The Netherlands, Canada, Sweden and Austria, Bell Communications, Ericsson, Data General Corporation, Hughes Aircraft, NCR Corporation, Prime Computer, Reuters, Olivetti and many others.

Retix Software Products

All protocols are implemented in standard C language, ready to port, fully documented, require minimal operating system services and are highly optimised for performance.

Retix products available from Datacraft are:

CCITT X.400 MESSAGE HANDLING SYSTEM

☐ Conformant to NBSIR 86-3386-3 implementation Agreements for OSI protocols
☐ Implements a full X.400 Message Handling System consisting of:
  — Interpersonal Messaging User Agent (IPM UA)
  — Message Transfer Service (MTS)
  — Reliable Transfer Service (RTS)

OSI PRESENTATION PROTOCOL

☐ Required by MAP 3.0 and TOP 3.0
☐ Conformant to ISO/DIS 8822, ISO/DIS 8823, ISO/DIS 8824, ISO/DIS 8825 and NBSIR 86-3395
☐ Kernel functional unit

SESSION

☐ Conformant to ISO/DIS 8327, NBSIR 86-3385-1, MAP 2.1 and MAP/TOP 3.0
☐ Supports multiple SSAPs and unlimited length SSDUs
☐ Full, BCS, BSS and BAS subacts provided

TRANSPORT

☐ Conformant to ISO/DIS 8602 and 8073, NBS ICST/SNA 85 1, MAP 2.1 and MAP/TOP 3.0
☐ Class 0/2, Class 0/2/4 (CONS), and Class 4 (CLNS) supported
☐ TPDU size (128-8KB), checksumming and expedited data are negotiable

INTERNET

☐ Conformant to ISO/DIS 8473, NBSIR 86-3385-1, MAP 2.1, MAP/TOP 3.0
☐ Provides segmentation and reassembly
☐ Supports any ISO/DIS 8348/DAD2 NSAP address format
☐ Optional Source Routing during forwarding
☐ Allows Inactive Network Layer Protocol over individual subnetworks

ES-IS ROUTING EXCHANGE PROTOCOL

☐ Required by MAP 3.0 and TOP 3.0
☐ Conformant to ISO/DP 9542 and NBSIR 86-3385
☐ Configuration management and route redirect information supported

IP-X.25 SUBNETWORK DEPENDENT CONVERGENCE PROTOCOL

☐ Conformant to ISO 8473/DAD 1 and NBSIR 86-3385
☐ Subnetwork connection reference supported

X.25 PLP-1984

☐ Conformant to ISO/DIS 8348, ISO/DIS 8348/DAD 2, ISO/DIS 8880, ISO/DP 8878, ISO/DIS 8881 and FIPS 100
☐ Used on end systems in LAN or WAN or as relay between LANs/WANs

LLC

☐ Conformant to ISO/DIS 8802/2, ANSI/IEEE 802.2, NBSIR 86-3385, MAP 2.1 and MAP/TOP 3.0
☐ Class 1, 2 or 3 services provided

LAPB

☐ Conformant to ISO/DIS 7778 and CCITT X.25
☐ Single link protocol

NETBIOS

☐ Provides a fully compatible interface for Microsoft Network and the IBM Networks Program
☐ Provides full emulation of IBM NETBIOS

ASN.1 COMPILER

☐ Conforms to CCITT X.409 and ISO/DIS 8824 and 8825
☐ Accepts source written in ASN.1
☐ Produces C language source code for formatting and parsing PDUs
☐ Output includes header file and source file for initiator and responder
☐ Reduces application protocol development time by 40% or more

TESTING TOOLS

☐ Scenario files and interpreters for reference system and system under test
☐ OSI Transport and Session protocol Test Suite
☐ IBM NETBIOS Interface Test Suite

SERVICES

☐ Protocol software portation
☐ Protocol validation (Internet, Transport, Session, NETBIOS)
☐ Custom Engineering (Hardware and Software Implementations)

Datacraft Banyan — the networking superglue

Visitors to Datacraft's stand at ATUG '88 will be able to see for the first time in Australia, Banyan Systems Inc. latest Virtual Networking Operating System, VINES Release 3.0 — dubbed by enthusiasts as 'the networking superglue' because of its versatility and connectivity. Banyan's VINES Release 3.0 is the most significant release of VINES to date, incorporating over 100 enhancements. Release 3.0 clearly demonstrates Banyan's commitment to state-of-the-art communications and networking technology.

Many of the new features in VINES 3.0 are the direct result of customer recommendations, reflecting Banyan's close liaison with its extensive international customer base.

Of the many significant enhancements to VINES, VANGuard, represents a major step forward in network security, offering mainframe-type security in a corporate PC environment.

VANGuard offers features similar to mainframe security packages such as IBM's RACF and Computer Associates' ACF 2 and TOP SECRET. Because VANGuard is fully integrated into VINES STREETTALK — Banyan's distributed naming database — implementing the powerful new security features should be a familiar step for VINES administrators. Standard security features such as: audit trails and reporting tools, password encryption and protection from unauthorised login, user expiration dates, limitations of users' ability to change passwords, physical location and time/date login restrictions with dial-in limitations will be available with Release 3.0.

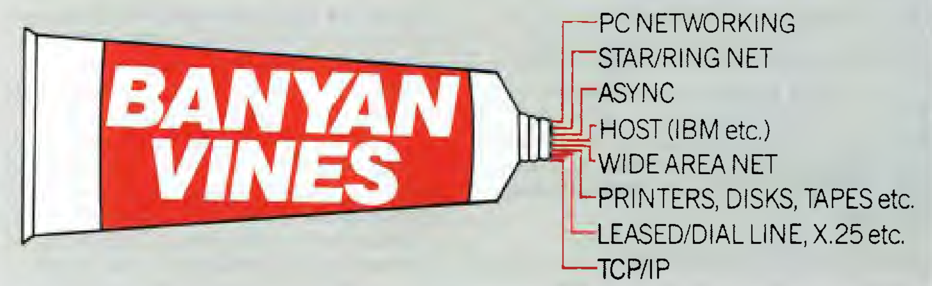
'VINES has always offered password protection and control over users, access to files, services and communications links, via Access Rights Lists which are an integral part of STREETTALK', said Tony Lee, Datacraft's Product Manager for Banyan. 'VANGuard now allows a security system to be totally transparent and self managing.'

Significant performance improvements are another major enhancement to VINES Release 3.0. VINES has always handled large file requests quickly and efficiently, however, small file requests were somewhat slower. Users of Release 3.0 can expect a 66 per cent increase in small file requests. In addition, Banyan's mail service performance has also been improved.

One of the many strengths of Banyan Advanced Network Servers is VINES' powerful IBM mainframe connectivity. Through the use of the integral 3270/SNA software option, the Banyan network server appears as a 3270 controller which can support up to 96 sessions — allowing PC users to emulate 3278 type terminals with up to two simultaneous sessions.

Banyan has further enhanced its IBM mainframe connectivity with such features as: hot key operation between 3270 sessions and MS-DOS applications using a single keystroke; support for up to four simultaneous sessions; additional support for IBM 3279 Model 2b screen emulation including customisation of video attributes.

Banyan's Vines software allows transparent interconnection.



What this now means to users in IBM environments, for example, is that a user can hot key out of, say, a Lotus 123 spreadsheet, enter a 3270 emulation, load down additional data, exit from the 3270 sessions and re-enter the Lotus 123 spreadsheet at the point where it was exited, saving lengthy keystroke operations.

Another example, involving the hot key and simultaneous session support would be a user switching between an MS-DOS application, a PROFS mail message and an inventory database while generating a report.

This demonstrates clearly the powerful capabilities of hot key and simultaneous session support.

How many times have you wished that the printer generating your word processing and spreadsheet documents was no more than a few steps away?

Banyan has remedied this problem, with the addition of the Network PC printing option. This option supports network printers attached to local non-dedicated workstations on the network. VINES still spools all print jobs at the server and then directs them to the PC-attached printer just as if it were attached to the server while the workstation may be performing some other function such as sending mail, or using an MS-DOS application.

The PC printing option is sensitive to PC activity and if necessary will slow down the printing task in favour of the foreground PC task.

Banyan, like Datacraft, is strategically committed to standards. The company already supports de facto standard operating systems; MS-DOS and UNIX, as well as a wide range of industry standard networks such as ETHERNET TOKEN RING and so on. In addition, Banyan supports the industry standard wide area networking protocol, X.25; de facto standard mainframe protocols, 3270/SNA and 3270/BSC; and de facto networking protocols, NetBIOS.

Under VINES 3.0, Banyan extends its broad support for industry and de facto standards to include TCP/IP — an acronym for Transmission Control Protocol and Instanet Protocol — as defined by the US Department of Defence.

The TCP/IP suite of protocols has become the industry standard offering wide ranging connectivity in a multi vendor environment. Through its support under VINES this broadens Banyan's connectivity solutions.

Now workstations on a Banyan network will be able to access mini and mainframe files and mail as well as being able to login as a native terminal. Banyan's TCP/IP option will allow server communications on existing TCP/IP backbone networks including the ability to connect multiple TCP/IP networks as one.

'The introduction of VINES Release 3.0 further enhances the already impressive Banyan product range and will provide users with the very latest in data communications and networking technology,' Tony Lee added.

Datacraft has the exclusive franchise for Banyan products in Australia.

New range of dial-up modems to make the picking easy

Datacraft has released its new 'Craft' series of modems. These products and the supporting marketing campaign focus on the customer's needs to easily select a modem based on operating needs rather than technical specification. The 'Craft' modems offer the latest features and include a number of new features such as compression and error correction (MNP), which are now becoming popular overseas.

The five products in the series are:

Mailcraft

A videotex with speeds of 300, 1200/75 BPS, and 1200 BPS.

Infocraft

A 1200 BPS, Hayes/Concord Autodial, Auto Answer Modem for general use.

Quadcraft

A four speed, fully featured modem, operating up to 2400 BPS, with error correction and more.

Speedcraft

A four speed modem like the Quadcraft with the additional feature of data compression allowing it to operate at 4800 BPS asynchronous at little extra cost.

Procraft

A hi-speed V32 modem operating at 9600 BPS and offering many user-friendly features.

The 'Quadcraft', 'Speedcraft' and 'Procraft' use technology from Concord of Massachussets, which allows the modems to work over many more carrier sections than most other modems using conventional technology.

The marketing campaign highlight is the 'Quadcraft'. With its $959 recommended retail price and a host of features, it offers customers superior price performance.

Datacraft will continue to offer other modems outside this range, but a new promotional campaign will be centred around these five core products.

DATACRAFT
Data Communication

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